ALAGAPPA UNIVERSITY



[Accredited with 'A+' Grade by NAAC (CGPA:3.64) in the Third Cycle
and Graded as Category–I University by MHRD-UGC]

(A State University Established by the Government of Tamil Nadu)

KARAIKUDI – 630 003

Directorate of Distance Education

M.Com

IV - Semester

310 41

MANAGEMENT ACCOUNTING

Author

Prof. M A Sahaf, The Business School, University of Kashmir, Srinagar
Units (1-5, 6.2-6.2.1, 6.2.3-6.2.4, 7.3, 8-10)

MN Arora, MCom, FCMA, Ex-Associate Professor, Department of Commerce, Hans Raj College, Delhi University
Units (6.0-6.1, 6.2.2, 6.3-6.8, 7.0-7.2, 7.4-7.9, 11-14)

VIKAS® PUBLISHING HOUSE PVT. LTD.
E-28, Sector-8, Noida - 201301 (UP)
Phone: 0120-4078900 • Fax: 0120-4078999
Regd. Office: A-27, 2nd Floor, Mohan Co-operative Industrial Estate, New Delhi 1100 44
• Website: www.vikaspublishing.com • Email: helpline@vikaspublishing.com

Work Order No.AU/DDE/DE12-02/Preparation and Printing of Course Materials /2020 dated 30.01.2020, Copies-500

SYLLABI-BOOK MAPPING TABLE

Management Accounting

Syllabi	Mapping in Book
BLOCK I: MANAGEMENT ACCOUNTING CONCEPTS **UNIT – I:** Management Accounting: Definition – Scope – Objectives – Functions – Role– Importance – Limitations – Management accounts Vs Financial accounting – Management and Cost accounting. **UNIT – II:** Installation of management accounting system – Tools of management accounting – Reporting.	**Unit 1:** Introduction to Management Accounting **(Pages 1-17);** **Unit 2:** Installation of Management Accounting System **(Pages 18-34)**
BLOCK II: FINANCIAL ANALYSIS **UNIT - III:** Financial Statement Analysis: Financial Statements – Nature and limitations of financial statements – Analysis and Interpretation. **UNIT – IV:** Comparative statements – Common size statements – Criticism of published accounts and cost accounting. **UNIT - V:** Ratio Analysis – Significance and uses – Important managerial uses of ratio analysis. **UNIT – VI:** Types of ratios – Profitability ratios – Turnover ratios – Liquidity ratios – Proprietary ratios – Market earnings ratios – Factors affecting efficiency of ratios. **UNIT – VII:** Uses of ratio analysis – Uses and limitations – Construction of profit and loss account and balance sheet with ratios and relevant figures. **UNIT – VIII:** Fund Flow Analysis - Need and meaning – Preparation of schedule of change in working capital and the fund flow statement – Projected fund flow statement – Managerial uses and limitations of fund flow analysis **UNIT – IX:** Cash Flow Analysis - Need – Meaning – Preparation of cash flow statement – Managerial uses of cash flow statement – Limitations – Differences between fund flow and cash flow analysis.	**Unit 3:** Introduction to Financial Statement Analysis **(Pages 35-47);** **Unit 4:** Financial Statement Analysis-Methods and Criticism **(Pages 48-60);** **Unit 5:** Ratio Analysis: Significance and Uses **(Pages 61-66);** **Unit 6:** Types of Ratios **(Pages 67-90);** **Unit 7:** Uses of Ratio Analysis **(Pages 91-116);** **Unit 8:** Fund Flow Analysis **(Pages 117-154);** **Unit 9:** Cash Flow Analysis **(Pages 155-181)**
BLOCK III: COST ANALYSIS **UNIT – X:** Budgeting: Meaning of Budget and Budgetary Control – Importance – Limitations – Classification of budgets and budgets preparation – Cash budget – Sales budget – Production budget. **UNIT – XI:** Materials purchase budget - Fixed and flexible budgeting – Performance budgeting – Master budget - Zero-base budgeting. **UNIT – XII:** Marginal Costing and Break Even Analysis: Definition – Marginal costing Vs Absorption costing – Justification for marginal costing – Marginal cost sheet – Segregation of semi-variable costs – Contribution – Key factor. **UNIT – XIII:** Managerial uses of marginal costing – Pricing decisions – Level of activity planning – Mix of sale – Profit planning techniques – Make or buy decisions. **UNIT – XIV:** Break-even Analysis – Break-even meanings, chart and graph – P/V ratio – Margin of Safety – Assumptions of break – Even analysis – Limitations of break-even analysis – Advantages and limitations of marginal costing – Differential costing.	**Unit 10:** Budgeting **(Pages 182-209);** **Unit 11:** Preparation of Different Budgets **(Pages 210-228);** **Unit 12:** Marginal Costing and Break Even Analysis **(Pages 229-244);** **Unit 13:** Managerial Uses of Marginal Costing **(Pages 245-267);** **Unit 14:** Break-Even Analysis **(Pages 268-292)**

CONTENTS

INTRODUCTION

NOTES

Accountancy is a highly technical subject, which makes it seem to its reader a difficult subject to master. But a clear understanding of the basic concepts can equip the business managers get a better look at the cost and profit related to the current operations. This will subsequently enhance planning and decision making, eventually leading to an increase in the profits. Cost accounting deals with the recording, classifying, assigning and analysing of company's cost with respect to specific activities and departments. There different concepts involved here like the cost object and cost centre. Additionally, costs are also classified into material, labour, overhead costs depending on their nature. There are numerous ways of recording and studying such costs in order to get a clearer picture of what is necessary, what can be altered and what needs to be eliminated from the company's operations.

Management accounting is another type of accounting crucial for business to get a better understanding of their overall business, projections and the changes that can be incorporated. It is different from cost and financial accounting firstly because it is intended only for the internal decision makers of the company. Management accounting includes under its fold, different types of analysis, all aimed at increasing the profitability of the company.

This book, *Management Accounting*, is written with the distance learning student in mind. It is presented in a user-friendly format using a clear, lucid language. Each unit contains an Introduction and a list of Objectives to prepare the student for what to expect in the text. At the end of each unit are a Summary and a list of Key Words, to aid in recollection of concepts learnt. All units contain Self-Assessment Questions and Exercises, and strategically placed Check Your Progress questions so the student can keep track of what has been discussed.

BLOCK - I
MANAGEMENT ACCOUNTING CONCEPTS

NOTES

UNIT 1 INTRODUCTION TO MANAGEMENT ACCOUNTING

Structure

1.0 INTRODUCTION

Accounting plays a crucial role in the functioning of an organization. It not only helps in enhancing decision making capabilities, but also facilitates the efficient utilization of resources. Organizations across the globe operate in a highly dynamic and complex business environment, in which managers need relevant and current information to aid them in decision making. Accounting must respond to the changing needs of the decision-makers in order to justify its relevance in contemporary business. In fact, the significance of financial information has always been recognized, but in the present business scenario, such information has become a resource parallel in importance to factors of production. Consequently, accounting information is becoming increasingly critical to the continuing success of an organization. With the growing importance of information as a resource, organizations have felt the need for a system that is capable of managing this resource efficiently. This is, perhaps, the basic reason for business students to study the anatomy and operation of the accounting system, which provides information to managers for decision making. In this unit, you will be introduced to the field of management accounting.

1.1 OBJECTIVES

NOTES

After going through this unit, you will be able to:

- Explain the definition, features and scope of management accounting
- Discuss the objectives and functions of management accounting
- Describe the role and importance of management accounting
- Examine the advantages and limitations of management accounting
- Differentiate between management, financial and cost accounting

1.2 DEFINITION, FEATURES AND SCOPE

Management accounting is a segment of accounting that deals specifically with the analysis and reporting of information to management about the operations of the organization with an objective to facilitate decision making. On the one hand, management accounting aims to provide adequate financial information to managers for decision making and on the other, it is oriented towards managerial control. Management frequently requires timely financial information concerning different aspects of the organization, ranging from special purpose report of a specific department's operating performance to the preparation of annual budgets and forecasts, which encompass the entire business.

The term 'management accounting' was first formally mentioned in 1950 in a report entitled '*Management Accounting*', published by the Anglo-American Council of Productivity Management Accounting Team after its visit to the United States in the same year. The team in its report defined management accounting as '*the presentation of accounting information in such a way as to assist management in the creation of policy and in the day-to-day operation of an undertaking.*

Thereafter, a number of attempts have been made by various professional bodies and associations to define management accounting in its right perspective. As a consequence thereof, numerous definitions on management accounting are added to the literature year after year.

All these definitions place emphasis on the information processing and decision making aspects of accounting. The analysis of the definitions further reveals that the system of management accounting is not designed to appraise and monitor the past performance of individuals and groups but to assist managerial decisions affecting the future. Thus, management accounting is a system for gathering, summarizing, reporting and interpreting accounting data and other financial information primarily for the internal needs of management. Thus, *management accounting is a system capable of generating accounting information that assists internal management in the efficient formulation, execution and appraisal of business plans that help the organizations* to *achieve their strategic objectives*.

Thus, management accounting in addition to helping managers in the decision making process, facilitates them in intra-firm resource allocations, fixation of responsibilities and the evaluation of future policies and strategies. All this brings to light an important fact—that management accounting has to perform two separate, distinct functions of financial and management reporting and that the data needs for each are often different. Few intelligent financial and economic decisions can be made in the absence of that information reservoir. Involvement with both time dimensions, past and future, places the executive near the centre of the control and decision making processes in any organization.

Features of Management Accounting

It is clear from the above definitions that management accounting is concerned with accounting data that is useful in decision making. The main features of management accounting are as follows:

1. **Useful in decision making:** The essential aim of management accounting is to assist management in decision making and control. It is concerned with all such information which can prove useful to management in decision making.
2. **Financial and cost accounting information:** Basic accounting information useful for management accounting is derived from financial and cost accounting records.
3. **Internal use:** Information provided by management accounting is exclusively for use by management for internal use. Such information is not to be given to parties external to the business, like shareholders, creditors and banks.
4. **Purely optional:** Management accounting is a purely voluntary technique and there is no statutory obligation. Its adoption by any firm depends upon its utility and desirability.
5. **Concerned with future:** As management accounting is concerned with decision making, it is related with future because decisions are taken for future course of action and not the past.
6. **Flexibility in presentation of information:** Unlike financial accounting, in management accounting there are no prescribed formats for presentation of information to management. The form of presentation of information is left to the wisdom of the management accountant who decides which is the most useful format of providing the relevant information, depending upon the utility of each type of form and information.

Scope of Management Accounting

Traditionally, the subject matter of management accounting mainly consisted of financial statement analysis and costing theory. As organizations began to operate in a highly dynamic and complex business environment, they realized that the existing subject matter of management accounting was insufficient to meet the challenges

NOTES

of the changing environment. To address the emerging challenges, management accounting enhanced its scope by including in its ambit many frameworks, tools and techniques borrowed from other disciplines such as economics, finance, mathematics, statistics and operations research. The contemporary subject matter of management accounting is summarized below:

Financial Accounting: Financial accounting is a prerequisite for any discussion on the subject of management accounting. Financial statements as generated by financial accounting contain enough data that is converted into information by organizations and used in their decision making. In fact, management accounting provides only tools and techniques for interpretation and analysis and the management accountants get the data for the purpose mainly from financial accounting. Thus, management accounting cannot exist without efficient financial accounting system.

Cost Accounting: Although managers generally use financial information in decision making, they often supplement their decisions with cost information as they have realized that any activity of an organization can be described by its cost. They make use of various cost data in managing organizations effectively. In fact, cost accounting is considered the backbone of management accounting as it provides the analytical tools such as budgetary control, standard costing, marginal costing, inventory control, operating costing, etc., which are used by management to discharge its responsibilities efficiently.

Financial Statement: Analysis Managers frequently use information based on the data collected from financial statements. This information can be obtained either by selecting individual numbers from the statements or by developing certain trends and ratios. Any attempt in this direction is referred to as financial statement analysis. The analysis and interpretation of the data contained in financial statements can provide a reader meaningful insights and conclusions about the organization. Over the past few decades, numerous techniques have been developed which are useful for the proper interpretation and analysis of financial statements.

Budgeting: Budgeting, which lies at the heart of management accounting, refers to a systematic plan for the utilization of organizational resources. As a management tool, budgeting aims to coordinate and integrate the efforts and activities of various departments with the cooperation of those who seek to achieve a common goal. In fact, the organizations exercise their operational control through the budgets prepared in advance for every major activity of the business.

Inflation Accounting: Inflation accounting attempts to identify certain characteristics of accounting that tend to distort the reporting of financial results during periods of rapidly changing prices. It devises and implements appropriate methods to analyse and interpret the impact of inflation on the business transactions.

Management Reporting: Clear, informative and timely reports have always been recognized as managerial tools in reaching decisions that not only help the organizations to improve their performance but also make the best use of their

resources. Thus, one of the basic responsibilities of management accounting is to keep the management well informed about the operations of the business. To discharge this responsibility efficiently, management accounting needs to prepare quarterly, half-yearly and other interim reports and submit the same to the management.

Quantitative Techniques: Many managers recognize that the financial and economic data available for managerial decisions can be more useful if analysed with highly sophisticated techniques of analysis and evaluation. Such techniques as the subject matter of quantitative analysis allow managers to create information from their financial database that is not, otherwise, available. In addition to the techniques like time series, regression analysis and sampling techniques, the managers also make use of linear programming, game theory and queuing theory for this purpose.

Tax Accounting: Since taxation plays an important role in the profitability of a commercial organization, it is essential for a management accountant to have a complete knowledge of business taxation. The business profit and the tax thereon are to be ascertained as per the provision of taxation. The filing of tax returns and the payment of tax in due time is the exclusive responsibility of the management accountant.

Internal Audit: Internal audit as a discipline of management accounting makes arrangements for performance appraisal of the organization's various departments. Thus, a management accountant must possess knowledge about the fixation of responsibilities and measurement of results.

Office Services: To discharge the responsibilities efficiently, a management accountant has to deal with data processing, filing, copying and duplicating. His area of responsibilities also included the evaluation and reporting about the utility of different office procedures and machines.

1.2.1 Objectives and Functions

The basic role of management accounting is to provide accurate and relevant information to the internal parties of an organization for decision making. To discharge this responsibility effectively, management accounting has to undertake collection, processing, analysing and interpreting of data, as well as communication of the resulting information to such internal parties who intend to use the same in their decision making process. In fact, the said activities can be recognized as the bases to identify and examine the functions of management accounting and accordingly the major functions are summarized below:

Data Collection: The first function of management accounting is to collect the requisite data from all possible resources. Since the data was traditionally restricted only to economic and financial items/factors, management accountants would make use of the financial statements like profit & loss account and balance sheet for the purpose. Over the past few years, the activities of management accounting have

crossed all traditional boundaries by considering not only monetary items and factors in its studies but also non-monetary factors like. Such paradigm shift in the approach of the management accounting has made its scope much wider. To meet the growing demands of the wider scope, management accounting is bound to utilize both internal as well as external sources of data collection.

Data Processing: The data so collected and stored needs to be converted into information through processing. Data processing refers to the series of activities consisting of compilation, classification, tabulation and summarization that aims to make data information.

Analysis and Interpretation: The data collected from various internal as well as external sources does not have inherent meaning and in fact, its meaning is generally influenced by the nature and scope of the tools and techniques used for its analysis. Further, the data as such is not of much use for the management but it becomes so once it is analysed and interpreted in the context of the nature of the decisions. Thus, the process of analysis and interpretation makes the data so significant for the success of the organization that it is being recognized as a strategic asset for the company in a competitive market. However, the management accountant has to choose the relevant and most appropriate technique for proper interpretation of the data after taking into consideration the nature of the concerned problem.

Communication: As a crucial function of management calls for the transmission of information to the concerned parties for use. Management accounting plays a special role in managing the affairs of the business by providing not only the conventional reports to the decision makers of an organizations but also in taking necessary measures to ensure the supply of adequate information at right time to enable the decision-makers of the organization to address the challenges of the changing environment.

In addition to basic functions discussed above, management accounting is also responsible to carry out some secondary functions that are summarized below:

Coordinating: Management accounting is often entrusted with the responsibility to coordinate the various activities of a business. Organizations generally use techniques such as budgeting and financial reporting for the purpose.

Special Studies: Contemporary business is operating in a dynamic environment where even a minor change in any of its elements can have a significant impact on the business outcomes. Therefore, management is always interested to know the areas of business which can contribute to the stability and profitability of the concern. To meet this objective, management accounting carries out various special studies such as sales analysis, economic forecasts, price spread analysis, etc.

Tax Administration: In the modern business organizations, tax administration is being recognized as a significant area of study that falls within the scope of management accounting. Tax administration involves tasks like the submission of necessary documents and return to the tax authorities, including the supervision of all matters relating to tax.

1.2.2 Role and Importance of Management Accounting

Traditionally, the role of the management accountant has been of a facilitator responsible for providing sufficient accounting information to the decision-makers in an organization. Therefore, the management accountant was responsible for devising and operating an accounting information system that was capable of collecting, processing, interpreting and communicating the accounting information for use within the organization with the aim of attaining organizational efficiency and effectiveness. Thus, traditionally, the job of the management accountant in an organization as advocated by Williamson (2003), has revolved around the following major activities:

- Accounting for product valuation and pricing
- Policy formulation and planning
- Decision making
- Cost control

Recent developments in information technology, accompanied by the emergence of knowledge management, a rapidly changing competitive environment and increasing globalization of business have led corporate houses to introduce strategic orientation in their planning process. The change in orientation is bound to bring a drastic change not only in the nature and scope of management accounting but also in the task and role of the management accountant in business organizations. Realizing the need to bring changes in the role of management accountants, Siegel and Sorensen state that the role of accountants should continually evolve to remain relevant in the changing business environment. The traditional role of the management accountant, which has been restricted to the supplier of operational and financial information within the organization, is no longer sufficient to meet the growing demands of a changing business environment. Therefore, the management accountnt needs to grow into a high-level decision support specialist who would help a company in strategic management efforts. Thus, the emerging role of a managerial accountant will be quite different from his traditional role in the sense that he has to be an active participant in the decision making process, along with the functional managers in an organization. Such participation will not only make him a member of a firm's functional team that is responsible for value creation but also change the nature of his job from a 'staff' to a 'business partner'.

The new role of the management accountant, which calls for a change not only in the task but also in his status within an organization, has been captured by many scholars as:

> Management accountants will get a number of opportunities to initiate and execute specific actions to address the changes in the global economic environment. The traditional role of providing accurate, timely and relevant information of a management accountant will be replaced by a wider and vibrant role where he will be an active participant in the strategic process of an organization.

NOTES

The below-mentioned comments of Siegel and Kulesza about the new role of management accountant are not different from the above-mentioned views:

> Management accountants are business partners with their customers (managers in operating or service units), internal consultants and organizational educators.

These views are also supplemented by the remarks of Siegel and Sorensen,who said that the characterization of management accountants in leading-edge companies has gone from 'bean counter' and 'corporate cop' on the periphery of business decision making, to 'business partner' and 'valued team member' at the very centre of strategic activity.

Thus, the emerging role of managerial accountant will be quite different from his traditional role in the sense that he will be active participant in the decision making process along with functional managers in an organization. Such participation will not only make him a member of a firm's functional team that is responsible for value creation but also change the nature of his job from a 'staff' to a 'business partner'. The change in the role of management accountant on the one hand will widen the horizon of his job and on the other hand will make his job more demanding in terms of potential and skills. The new role, in fact, will provide the management accountant more opportunities to explore his potential in meeting the expectations of the stakeholders in an organization. However, to address the emerging challenges of the new role, the management accountant must be adaptable with sufficient knowledge of a range of relevant disciplines so as to be able to provide the right information at the right time.

To compete and grow in a highly competitive and complex business environment of the future, organizations need to develop capacity and competence to create and deliver superior delivered value to customers and use the same as a sustainable competitive advantage. Consequently, management accountants are bound to help their organizations not only in measuring the cost of operation accurately but also in identifying and devising the means for eliminating non-value added costs which they will be able to do only if they possess adequate knowledge of the value-creating process of their respective organizations. While commenting on the opportunities of enhancing the value of a firm's output, Cooper states that cost management, like quality, has to become a discipline practised by virtually every person in the firm. Since the effective use of cost management techniques calls for the application of tools and techniques not only from management accounting but also from engineering and other functional areas of management, the task of management accountants has become multifaceted, which demands knowledge of project management and manufacturing processes. Thus, management accountants need to possess sufficient knowledge of the latest costing tools and techniques like target costing, activity-based costing, throughput costing, strategic cost management, kaizen costing and balanced scorecard.

Management Accountant in an Organization

NOTES

The questions that generally strike the mind of a student while studying management accounting are (i) who is a management accountant? and (ii) what is his status in the organization? A management accountant occupies a pivotal position in the organization and is responsible for devising and operating an accounting information system that is capable of collecting, process, interpreting and communicating the accounting information for internal users of the organization. However, in Indian corporate houses, the position is commonly known as 'financial controller', 'controller of finances', 'financial adviser', and 'director finance' rather than management accountant. To answer the question 'what is the status of management accountant' in an organization, one needs to examine a firm's organizational structure. Organizational structure, which is basically a framework within which people work together to achieve organizational goals, involves breaking up of the total work of the organization into workable units with clearly defined duties and responsibilities. Such a structure not only helps the employees of an organization to understand their positions and authority within the organization but also defines their relationship with each other. Therefore, it is essential for an organization not only to have a clearly defined organizational structure but also communicate the same to its employees. The most popular tool to make employees understand the organizational structure is 'organizational chart', which is the schematic diagram of the various job positions.

The chart, in fact, clearly depicts line and staff positions in the corporation. In the context of employees' authority and role, the position of the corporation can be conveniently categorized into two forms: 'line' and 'staff'. Since in a line position, the employee has the authority to plan, organize, direct and control the activities of the organization, therefore, he is directly involved in attaining organizational goals. Whereas a staff position serves in the capacity of an advisor, he indirectly contributes towards achieving the organizational goals. Management accountants are generally recognized as staff positions that are devoid of the formal right to make decisions and as such have no direct responsibility for accomplishing the objectives of an organization. Therefore, management accountants are meant to assist functional managers in carrying out the tasks that are necessary for attaining the goals of the organization. However, the accountants possess the authority over their staff deployed in their respective units.

It must be understood that management accountants in India are generally members of strategic teams in large organizations. In fact, they have the responsibility of providing relevant and timely data to the team in order help it in planning and controlling activities of the organization.

1.2.3 Advantages and Limitations

Management accounting offers the following benefits to the organizations:

- It increases the efficiency in business activities.
- It ensures efficient regulation of business activities by establishing an efficient system of planning and budgeting.
- It makes possible the efficient utilization of the available resources and thereby increase the return on capital employed.
- It ensures effective control by comparing actual results with the standards.
- It helps maintain good relations with the public by providing quality service to the customers.
- It provides the means to motivate the employees.
- It keeps managers informed about the ongoing operations, thereby enabling them to suggest remedial measures in case of deviations.
- It helps in evaluating the efficiency and effectiveness of the organization's business policies by incorporating management audit.

Limitations of Management Accounting

Despite the benefits mentioned above, management accounting suffers from several drawbacks:

- Management accounting uses data that are available from financial statements. Thus, the validity of the decisions largely depends on the reliability of the historical data as obtained from conventional financial statements. Any drawback in such statements is bound to affect the effectiveness of the decision.
- The application of management accounting tools and techniques requires knowledge about various subjects like accounting, costing, economics, taxation, statistics and mathematics, engineering and management. To find a manager in the organization with a comprehensive knowledge of all these subjects is almost impossible.
- Though management accounting attempts to analyse both qualitative and quantitative factors that influence a decision, the element of intuition in managerial decision has not been completely eliminated. There is a tendency among business executives to use a short-cut approach to managerial problems rather than the lengthy process as required by the scientific analysis prescribed by management accounting.
- The installation of management accounting system requires a huge investment both in terms of money and manpower. Therefore, smaller concerns may not be able to afford it.

- Management accounting is in the process of evolution and as such it still has to go through many developmental processes before reaching a final stage. Consequently, the techniques of management accounting lack the sharpness and fluidity that is required of an efficient system. Even the analysis and interpretation considerably differ from organization to organization.
- The management system cannot be replaced by a system of management accounting, as the latter system simply provides the necessary data for a decision and not the decision itself.
- The principle of objectivity is not always followed in its real spirit in management accounting as the collection and analysis are considerably influenced by the personal bias of the management accountant.

1.3 MANAGEMENT ACCOUNTING VS FINANCIAL ACCOUNTING AND COST ACCOUNTING

The compartmentalization of accounting into various branches generally sounds somewhat artificial and misleading as all these branches are usually drawn from a common pool of financial data used in preparing reports for groups who are often involved in making a variety of interdependent decisions. But a close examination of the two systems shows that they differ in several ways from each other. Some major differences between these two accounting systems are summarized in Table 1.1

Objectives: The basic objective of accounting is to measure the business result and assess the financial position of an organization. To achieve this objective, financial accounting has to perform functions like recording, classifying and summarizing business transactions of an organization during the accounting period. Such functions are related to the preparation of final accounts, *i.e.*, profit and loss account and balance sheet. Contrary to this, the objective of management accounting is to facilitate managerial decisions. Management accounting deals with the preparation of analytical and critical financial reports to assist management in improving the organization's performance.

Nature: Financial accounting is historical in its outlook in the sense that it has to maintain records of such business events that have taken place during the accounting period. Under financial accounting system a transaction is recorded as and when it takes place. Therefore, prospective transactions are not considered before their maturity under such system of accounting. On the other hand, management accounting system is devised to help managers in shaping future operations of the business. It deals with projection of data to be used for planning and decision making for the future. Thus, management accounting has prospective character.

NOTES

Table 1.1 Comparison of Financial Accounting and Management Accounting

Areas of Comparison	*Financial Accounting*	*Management Accounting*
Objective	• To measure and assess the business result and financial position of a concern	• To help decision-makers by providing them relevant and sufficient data
Nature	• Historical in its outlook	• Prospective in nature
Adherence	• Governed by generally accepted accounting principles (GAAP)	• Does not focus on generally accepted accounting principles (GAAP)
Subject matter	• Financial accounting statements are confined to the business as a whole	• Management accounting reports are prepared for each unit or division of the business separately in order to ensure effective planning and control
Compulsion	• Obligatory for the organization to maintain a system of financial accounting	• Discretion of the organization to have system of management accounting
Precision	• Focus on precision	• Based on approximation
Frequency of reports	• Financial accounting statements are prepared at the end of the financial period which is usually a period of 12 months	• The management accounting reports and statements are prepared at regular intervals depending upon the demand of the decision-maker
Recipients	• The statements are extensively used by outsiders	• The statements are exclusively meant for internal parties
Nature of the data used	• Recognize only such business transaction that can be expressed in monetary units	• Recognizes both monetary as well as non-monetary data
Publication	• Financial statement are generally published every year	• Management accounting statements and reports are not generally published

Adherence to Accounting Principles: Financial accounting system is based on some accounting principles and conventions which a financial accountant has to strictly follow while preparing financial accounts and statements. The financial accounting system can be result-oriented only when the accounting principles and conventions have been properly followed and applied. But management accounting is not bound by the constraints of generally accepted accounting principles and conventions. The preparation of reports and statements under management accounting are governed by the requirements of the management. Management can frame its own ground rules and principles regarding the form and content of information required for internal use.

Subject Matter: Financial accounting considers the business as one entity and accordingly financial accounting reports have been confined to the business operations as a whole. Such statements present the position and the performance of the entire business. Whereas under management accounting system each unit/department/division/cost centre of the business is treated as a separate entity in order to ensure effective planning and control. Therefore, profitability and performance reports are prepared for each unit or division of the business separately.

Compulsion: The Indian Companies Act has made it obligatory for the companies to maintain a system of financial accounting. At the same time, the benefits as offered by a financial accounting system have made it more or less compulsory for the non-company organization. On the other hand, the setting up of management accounting system is at the discretion of the management.

Precision: Financial accounting pays more emphasis on precision and considers only actual figures in the preparation of its statements. There is no scope for approximate figures in financial accounting. But the reports and statements as prepared under management accounting system contain more approximate figures than the actual figures. Thus, management accounting is less precise as compared to financial accounting.

Frequency of Reports: The financial statements, the outcome of financial accounting, are prepared at the end of the financial period which is usually a period of 12 months. But the management accounting reports and statements are prepared at regular intervals so that management may not face any difficulty in decision making. Management is constantly informed about the business performance through these reports and statements. Thus, the reporting frequency of management accounting is much higher as compared to reporting of financial accounting.

Recipients: Financial statements such as profit and loss and balance sheet, are extensively used by outsiders *i.e.*, shareholders, creditors, tax authorities, etc. On the other hand, management accounting reports are exclusively meant for management. Such reports are not easily available to outsiders.

Nature of Data Used: The financial statements as prepared under financial accounting contain only such transactions that are expressed in monetary terms. The non-monetary events such as nature of competition, business reputation, change in fashion, are not at all considered by financial accounting. But management accounting uses both monetary and non-monetary data.

Publication: Financial accounting statements are published by almost every business organization for the information of the general public. The Indian Companies Act has made it compulsory for every company to publish its final accounts *i.e.*, profit and loss account and balance sheet. By contrast, the publication of management accounting reports and statements is not mandatory.

Distinction Between Cost Accounting and Management Accounting

An examination of the meaning and definitions of cost accounting and management accounting indicates that the distinction between the two is quite vague. Some writers even consider these two areas as synonymous while others distinguish between the two. Horngren, a renowned author on the subject, has gone to the extent of saying, '*Modern cost accounting is often called management accounting. Why? Because cost accountants look at their organization through manager's eyes*.' Thus managerial aspects of cost accounting are inseparable

NOTES

from management accounting. One point on which all agree is that these two types of accounting do not have clear cut territorial boundaries. However, distinction between cost accounting and management accounting may be made on the following points mentioned in Table 1.2.

Table 1.2 **Cost Accounting vs Management Accounting**

Basis	**Cost Accounting**	**Management Accounting**
1. **Scope**	Scope of cost accounting is limited to providing cost information for managerial uses.	Scope of management accounting is broader than that of cost accounting as it provides all types of information, *i.e.*, cost accounting as well as financial accounting information for managerial uses.
2. **Emphasis**	Main emphasis is on cost ascertainment and cost control to ensure maximum profit.	Main emphasis is on planning, controlling and decision making to maximize profit.
3. **Techniques employed**	Various techniques used by cost accounting include standard costing and variance analysis, marginal costing and cost volume profit analysis, budgetary control, uniform costing and inter-firm comparison, etc.	Management accounting also uses all these techniques used in cost accounting but in addition it also uses techniques like ratio analysis, funds flow statement, statistical analysis, operations research and certain techniques from various branches of knowledge like mathematics, economics, etc., whatsoever can help management in its tasks.
4. **Evolution**	Evolution of cost accounting is mainly due to the limitations of financial accounting	Evolution of management accounting is due to the limitations of cost accounting. In fact, management accounting is an extension of the managerial aspects of cost accounting.
5. Statutory Requirements	Maintenance of cost records has been made compulsory in selected industries as notified by the Govt. from time to time.	Management accounting is purely voluntary and its use depends upon its utility to management.
6. **Database**	It is based on data derived from financial accounts.	It is based on data derived from cost accounting, financial accounting and other sources.
7. **Status in organization**	In the organizational set-up, cost accountant is placed at a lower level in hierarchy than the management accountant.	Management accountant is generally placed at a higher level of hierarchy than the cost accountant.
8. **Installation**	Cost accounting system can be installed without management accounting.	Management accounting cannot be installed without a proper system of cost accounting.

NOTES

Check Your Progress

1. What was included in the traditional subject matter of management accounting?
2. State the aim of budgeting.
3. The existence of which type of accounting depends on the discretion of the organization?
4. Mention the difference in the emphasis of cost and management accounting.

1.4 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. The traditional subject matter of management accounting included financial statement analysis and costing theory.
2. The aim of budgeting is to coordinate and integrate the efforts and activities of various departments with the cooperation of those who seek to achieve a common goal.
3. Management accounting is the type of accounting whose existence is at the discretion of the organization.
4. The difference in the emphasis of cost and management accounting is that cost accounting emphasizes on cost ascertainment and cost control to ensure maximum profit whereas management accounting emphasizes on planning, controlling and decision making to maximize profit.

1.5 SUMMARY

- Accounting plays a critical role not only in the efficient use of a firm's resources but also in its performance.
- Management accounting is a segment of accounting that deals specifically with the accounting and reporting of information to management regarding the detailed operations of the company in order for decisions to be taken in various areas of business.
- Management accounting helps an organization in the process of management, which generally consists of activities like planning, organizing, evaluating and communicating.
- The main features of management accounting are that is useful in decision making, basic information is derived from financial and cost accounting information, it is for internal use, it is purely option, concerned with future and has flexibility when it comes to the presentation of information.

- The contemporary subject matter of management accounting includes areas like financial accounting, cost accounting, financial statement, budgeting, inflation accounting, management reporting, tax accounting, etc.
- The main objectives and functions of management accounting include data collection, data processing, analysis and interpretation, communication, coordinating, special studies and tax administration.
- Traditionally, the role of management accounting has been more of a catalyst by helping the firms to utilize their resources efficiently.
- The emerging role of managerial accountant will be quite different from his traditional role in the sense that he will be active participant in the decision-making process along with functional managers in an organization.
- The compartmentalization of accounting into various branches generally sounds somewhat artificial and misleading as all these branches are usually drawn from a common pool of financial data used in preparing reports for groups who are often involved in making a variety of interdependent decisions. But a close examination of the two systems shows that they differ in several ways from each other.

1.6 KEY WORDS

- **Management accounting:** It is segment of accounting that deals specifically with the analysis and reporting of information to management about the operations of the organization with an objective to facilitate decision making.
- **Financial accounting:** It is a discipline of accounting which helps to regulate a system that is capable of recording, classifying and summarizing the mercantile transactions occurring in an organization.
- **Cost accountancy:** is an extension of the general accounting system. It is responsible for gathering, classifying and analysing the cost data required by the management to attain various organizational objectives.
- **Budgeting:** It refers to a systematic plan for the utilization of organizational resources.
- **Inflation accounting:** It attempts to identify certain characteristics of accounting that tend to distort the reporting of financial results during periods of rapidly changing prices.

1.7 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. What is management accounting?

2. List the features of management accounting.
3. Write a short note on the objectives and functions of management accounting.
4. Briefly explain the position of management accountant in an organization.
5. Differentiate cost and management accounting.

Long-Answer Questions

1. Discuss the scope of management accounting.
2. Describe the role of management accounting.
3. Examine the advantages and disadvantages of management accounting.
4. Critically compare financial and management accounting.

1.8 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice,* 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management,* 4th edition. New Delhi: Vikas Publishing House.

NOTES

UNIT 2 INSTALLATION OF MANAGEMENT ACCOUNTING SYSTEM

Structure

2.0 INTRODUCTION

Modern accounting as a dynamic and growing field is emerging as a strategic weapon that is helping to shape the direction and growth of organizations in the changing business environment. However, to explore and utilize the financial information generated by the accounting system of an organization for competitive advantage, managers must have a fair knowledge of the tools and techniques that they can use for analysing and interpreting the available information. Both the prerequisites of effective decision making—financial information and analytical techniques—are covered under management accounting, which involves the study of accounting information and techniques that managers use in analysing such information. In this unit, you will learn about the steps involved in the installation of a good management accounting system, the major tools of management accounting and the concept of management reporting.

2.1 OBJECTIVES

After going through this unit, you will be able to:

- Discuss the steps involved in the installation of a management accounting system
- Describe the tools of management accounting
- Discuss the emerging tools of management accounting
- Explain the concept of management reporting

2.2 STEPS IN THE INSTALLATION OF A MANAGEMENT ACCOUNTING SYSTEM

NOTES

Management accounting, though a system of accounting for internal use can play a significant role in the functioning of an organization. The following are the steps that needs to be put in place to ensure the effective installation of a management accounting system:

- A comprehensive organization manual is required to be made so that the role and functions of each staff is clearly defined and there is no duplication. The adoption of the manual will also make sure that the clear line of communication is indicated.
- There should be recruitment, training and development of the staff to be hired for these particular positions.
- There is a requirement for the designing, preparation for appropriate form for the purpose of returns, etc.
- There needs to proper codification and classification of accounts.
- It must be ensured that a system is in place for the seamless integration and use of cost and financial data.
- There needs to be an efficient system for the purpose of budgetary control.
- The management accountant should set up standards along with the standard costing techniques.
- There should be in place cost, profit and budget centres.

2.3 TOOLS OF MANAGEMENT ACCOUNTING

Management accounting is an information system designed to communicate meaningful economic and financial information to managers, so that they may discharge their functions efficiently. It makes extensive use of a number of tools and techniques to meet the increasing needs of business. Important among them are:

Financial Planning: Planning is necessary not only for better organizational performance and progress, but also for efficient utilization of available resources. In fact, it is recognized as a prerequisite for financial functions wherein finance plays a deciding role in executing them effectively. Financial planning is the process of deciding in advance the financial objectives, policies and procedures. An organization can achieve long-term, as well as short-term, financial objectives by employing financial planning. In the short term, it can help a concern in meeting its obligations by balancing the flow of funds. At the same time, its proper application can ensure efficient utilization of available financial resources in the long term.

NOTES

Analysis of Financial Statement: Financial statement analysis is a growing and ever changing set of systems and procedures designed to provide decision makers with relevant information derived from basic sources of data such as company financial statements and government and industry publications. Over the years, a number of techniques have been devised to analyse financial statements e.g., comparative financial statements, common-size statements, ratio analysis, trend analysis and fund flow statement.

Cost Accounting: Cost accounting is a vital part of the accounting system. It includes recording, classifying, analysis and reporting of all cost facets in a company's performance. Cost accounting procedures have to be designed carefully after taking into consideration the nature and requirements of the business and the data required at the different levels of management for effective cost control and cost reduction.

Standard Costing: Another major technique commonly used by the organizations for exercising control is standard costing. Under this arrangement standard costs are used to control the major activities of the business. Standard costs are predetermined targets against which actual results are evaluated. This is the basis for a system of management control for which the proper monitoring of performance is a key factor. The variances between standard and actual costs are computed and reported to management.

Marginal Costing: Marginal costing is a managerial technique that considers only variable cost in the decisions concerning with additional output. It is a reporting system that values inventory and cost of sales at its manufacturing variable cost. It is frequently used an internal management reporting system.

Budgetary Control: Budgetary control refers to a system of business control that uses budgets to control the major activities of business. The budgets for all major activities of the business are prepared in advance and the actual operations are carried out in accordance with the budget estimates. Generally the budgets are prepared by updating the previous year's figures in the light of some forward projections.

Funds Flow Analysis: Funds flow analysis attempts to highlight the causes of change in the financial position of a business enterprise between two balance sheet dates. Any statement prepared for this purpose refers to as funds flow statement. A funds flow statement helps managers in the efficient management of funds.

Management Reporting: Management reporting is considered as an essential component of a well designed planning and control system. Decision makers frequently require information on various aspects of business. Thus, it is the responsibility of the management accountant to communicate the required information to management at the right time and in a right manner.

Statistical Analysis: Accountants frequently confront masses of data from which they have to draw systematic and logical conclusions. Statistical analysis in general

and sampling theory in particular provides them a scientific method to draw reliable and valid conclusions about the properties of an entire population by studying only a chosen sample of the population.

NOTES

2.3.1 Emergining Tools of Management Accounting

The ever changing business environment would call for managerial tools and techniques that are intensive, comprehensive, and closely linked to real world. Consequently, the traditional set of tools and techniques that have shaped the scope of management accounting in the recent past would lose their relevance in the changing business environment as they would offer very little to managers in terms solution to the problems of contemporary business. The changing environment will have a far-reaching consequence on every activity of business. To remain effective in the changing environment, management accounting needs to adapt its scope in the context of the changes. Therefore, it is imperative for the students to have a fair knowledge of the accounting tools and techniques that have been devised over the years to address the challenges of changing environment. An attempt has been made in this section of the unit to give an overview of the said tools and techniques.

Total Quality Management

TQM, which is basically an organization-wide effort and commitment to improve quality in all aspects of business that are important to customers, aims to create a unified system of tools and techniques that ensure the working of all components of a business system together with an objective of maximizing customer satisfaction. This would mean that an organization as a whole has to become quality oriented in its outlook to meet the changing scenario of customer expectations. One has to recognize the fact that no product or service ever attains perfection and that neither the customer's expectations nor the quality of competition remains static. It is in this context, this philosophy of business promotes the concept of continuous improvement in organizational processes with the aim of making the organization highly competitive. Consequently, the concept of quality shall remain no more limited to the product only but shall call the attention of management to other components of the firm's market offering as well. The success of TQM largely depends on the extent to which the principles that govern its working have been followed in its execution. Therefore, it is essential for every member of the organization to understand the nature and implications of such principles.

Just-In-Time

Just-in-time (JIT) calls for supplies (raw materials and components) to reach the production operation in required quantities as and when they are needed. JIT, in fact, recognizes inventory as unnecessary waste, therefore, advocates to acquire an item as and when it is required rather than acquiring it in lot sizes and maintaining its inventory. Thus, it is basically a philosophy that strives to enhance a firm's

productivity by eliminating all sources of waste from the entire system of production. This perspective of JIT has revolutionized the traditional philosophy of maintaining excess inventory just-in-case (JIC) it is required. The traditional approach, in fact, generally fails to ensure quality raw material, reliable suppliers, efficient employees and equipment by hiding their problems through excessive inventories of different resources. Thus, JIT is a demand-pull system rather than a speculative push system used in traditional manufacturing systems. Realizing the significance of the JIT system, companies across the world in different areas of business have adopted this philosophy in the past decade.

Business Process Reengineering

To meet the growing demands of intense competition, organisations have to focus not only on resources generation but also on their efficient utilization. Every effort has to be made to maintain a higher productivity through high level of efficiency. To attain this goal, organizations may have to go for radical changes in their processes technically known as 'business process reengineering' or 'process reengineering' or simply 'reengineering'. Reengineering involves the fundamental rethinking and radical design of business processes to reduce costs, and increase speed, flexibility and responsibilities to customers. The philosophy of reengineering lies in the fact that it considers a radical overhaul of business processes rather than tweaking the existing system in a series of incremental improvements. Thus, reengineering does not strive towards a simple patching up of an existing process or a search for incremental improvements; rather it involves completely redesigning a business process in order to eliminate unproductive efforts, reduce opportunities for errors and reduce costs. Reengineering involves many tactical decisions, which if not carefully taken, can adversely affect the results. To make reengineering successful, organizations must focus on the principles recommended by experts for the purpose.

Life Cycle Costing

Life cycle costing is a costing approach that considers the sum of all the costs associated with a project during its operational life. It is a structured approach that addresses all the elements of a project cost, including planning, designing and executing costs. Thus, such an approach to costing, which has been growing both in importance and scope, aims to determine the sum of all the costs of ownership of a system during its active life. Product life cycle costing helps organizations not only in decision making but also in bringing high-quality products to the marketing with high efficiency and speed. Many people use the concept of life cycle costing for life cycle management, which is technically incorrect. In fact, life cycle costing embraces all costs associated with acquiring, using, maintaining and disposal of system, whereas life cycle management is a wider approach that attempts to integrate all the concerned sectors involved in product development. Thus, these two terms are related but not uniform. The basic aim of life cycle costing is to help management in product costing, whereas life cycle management aims to support sustainable development.

NOTES

Theory of Constraint

The theory of constraints (TOC) is basically a management philosophy that helps a firm to manage the constraints effectively to enhance its production efficiency. The theory recommends not only to differentiate between a firm's productive and unproductive activities but also to use its resources only on productive activities which contribute towards its manufacturing output. In fact, the rationale behind the TOC is to identify and examine the constraints within the organization with a purpose to manage them so that resources are used most efficiently. The concept of constraint as used in the theory refers to any bottleneck within a firm that prevents it from it its production goals.

Balanced Scorecard

There has been a feeling among business managers that the traditional performance measurement system generally fail to provide them the requisite information they need to be competitive. Since the traditional performance measurement system is purely financial-oriented, it fails to focus on such non-financial measures like customer satisfaction, efficiency of internal business process and motivation of employees which are equally critical for the success of any business in a competitive environment. Therefore, a number of frameworks have been developed over the years to help managers in this regard. The most popular among them is the balanced scorecard, which measures the performance of an organization from different perspectives like financial, customer, learning and growth, and internal business process. In fact, the perspectives include financial as well as non-financial dimensions. Such a strategic evaluation technique helps the managers to strike a balance between the different sets of objectives devised by the firms to meet the demands of shareholders, customers and operational systems. It is in this context that the term 'balanced' has been used in the nomenclature of the technique. Such a controlling technique aims to convert the firms' vision and strategy into a systematic and meaningful set of measures for evaluating performance. Thus, balance scorecard can prove a valuable tool in meeting a number of challenges faced by organizations today. In fact, such a tool provides a firm opportunity to tie not only resource allocation with strategy but also outcome measures with the performance drivers of outcomes.

Value Chain Analysis

The value chain attempts to find out the amount of value added to a product by the change a firm makes in it at each step as it passes from the raw material stage through production and distribution to the final customer. Value chain analysis enables a firm to enhance the value of its product by reviewing the activities that add little to the product value and identifying the possibilities to add more value at each stage. Since every organization takes in inputs and processes them in order to produce the output that it passes to the customer, the value chain begins with a firm's supplies and ends with its customers. The total value chain, therefore, consists

NOTES

of a number of firms. According to Porter, an organization's activities can be categorized into two types: Primary activities and support activities. For effective use of value chain, the firms have to study the linkages in the chain in order to examine the inherent relationship that exists between different activities constituting the chain. Such an attempt would help the organizations not only to study the impact of one activity on the cost and effectiveness of the other activities but also identify the primary and supporting activities that are most crucial to provide superior value to the customers. The study of value chain also brings to light an important fact—that the chain is not a collection of independent activities, but a system of interdependent activities. Therefore, managers should not consider the activities of value chain in isolation and should manage the chain as a whole system despite the varying importance of the different links. The successful application of the value chain concept calls for the benchmarking of competitors' value chains and their performance in order to identify the areas where the firm can claim a competitive advantage. The strategic significance of the value chain lies in its linkages and therefore, a marketer must understand the different types of linkages of the value chain and their contribution to value addition or cost reduction.

Check Your Progress

1. Name the reporting system that values inventory and cost of sales at its manufacturing variable cost.
2. How does statistical analysis assist management accountants?
3. What is life cycle costing?

2.4 MANAGEMENT REPORTING

Management reporting as an integral part of management control system provides adequate business information to various levels of management in the form of reports and statements at regular intervals. Thus, the process of supplying adequate information to the management is known as management reporting. It is a formal system designed to ensure timely supply of pertinent information to the management for decision making. Since reporting falls within the scope of communication, many scholars believe that the words communication and reporting should be used interchangeably. Although there may be few characteristics common in them, yet they vary both in nature and scope. Reporting is upward feature whereas communication is both upward and downward.

The scope of management reporting system should not be restricted only to the generation and supply of reports but the said system should also help managers in understanding the significance and use of the information contained in the reports. Usually the company's executives themselves are not aware of specific information that would be useful for them in discharging their duties. Therefore, it is one of the basic tasks of the management accountant to make the internal executives

understand the significance of diversified information in the success of decision making, covering various functional areas of the business. Further, research studies conducted in the recent past reveal that business executives generally fail not only to understand as how they could modify or augment existing reports to make them more advantageous for their business but also in judging whether a once useful report has become obsolete in part or in full because of a change in the business environment. Therefore, the management accountant has to work closely with functional managers to make requisite modification and augmentation of the reports possible.

Once the need to review and revise the reporting system is recognized, it is still not easy for the company's own executives to undertake the task. A specialist is more apt to have the skill and experience needed to address the issues like nature of requisite data, sources of data, methods of collecting and analysing data and techniques for effectively organizing the data into a report. To attain this purpose, the management reporting system has to be flexible and adaptable to address the implications of the changing environment.

Significance of Management Reporting

Most businesses today, large as well as small, depend on timely information available to the decision makers. In fact, information is recognized as most strategic resource for the organizations in the contemporary business which is highly dynamic and competitive. Managers are dependent on regular and pertinent information to perform the functions of business effectively and efficiently. Consequently, a suitable system of management reporting is considered a prerequisite for successful operation of the business. In fact, an effective management reporting system not only provides management with data for strategic and operational decisions but also alerts the management about the need for changes or at least the desirability of investigating such a need. Therefore, such a system not only signals the need for changes but also reflects the results of these changes once they are made and indicates the desirability of further action. Thus, management reporting is the instrument for making effective decisions and control. Further, it provides a chance to evaluate performance and suggests remedial actions if performance is not in tune with expectations.

Commenting on the significance of management reporting, Adrain McDonough, Director, Taylor Management Laboratory states that *no other field offers such concentrated room for improvement as does information analysis*. This view is further supplemented by the following observations of National Association of Accountants,s (1977):

> *As an organization grows, management must rely to a greater extent upon information compiled, summarised and interpreted by the accounting department and other specialised functional groups in the company. Modern techniques for collecting, focusing and transmitting information to the management, have had an important place in making possible the efficient operation of large organizations needed to utilize the advances in scientific*

NOTES

and engineering knowledge for producing better and less costly products. Even in small companies some systematic plan for collecting and presenting financial information is essential because management cannot personally observe and organize all the facts with respect to sales, costs and other aspects of a company's operations.

The above discussion brings to light an important fact that the flow of information in the form of reports and statement has become a prerequisite for the firms to perform managerial functions in the contemporary business world. The success of the management reporting system lies in the relevance of the information generated by the system to help functional managers in attaining organizational goals. The reports must present the information in a systematic manner to address the principles of completeness and consistency.

Principles (Characteristics) of a Good Reporting System

A managerial report is a vehicle for carrying information to different levels of management in the organization. It is the responsibility of the management accountant to prepare the managerial report regularly and submit the same to the management so that the business affairs of the enterprise are effectively and efficiently controlled. However, the task of preparing a managerial report is not so easy, a management accountant has to take sufficient care in the preparation of the managerial report to make it managerially effective and result oriented. A number of fundamental principles have been formulated for the effective use of reporting system. The important among them are listed below:

- The report should present true and fair view of the business affairs. The position as depicted by the report must be based on facts and figures. Every effort must be made to ensure that the whims and personal ideas of the management accountant may not jeopardize the reported material.
- The expected achievements from business activities must be stated in the report before such activities are carried out. The objectives of planning cannot be achieved effectively unless executors of the plans are aware of the scope of plans.
- A report should serve the basic purpose for which it is prepared. Further, it must be submitted in the form which best serves that purpose.
- A report must be relevant to the time and functions of the business enterprise. The responsibilities and obligations of the responsibility centre should be clearly defined and identified in the report.
- The report should be written in simple language and in a direct style. As far as possible, technical and scientific language should be avoided.
- The report must be prompt and timely prepared. Time is an important element in reporting particularly in control reports. However, the partial solution to the problem of timely reporting may be the use of 'Flash' reports.

- To make a managerial report self-contained to the extent necessary for decision making, supporting material/figures or other technical details must be attached with the report in the form of appendix. This abbreviates and speeds the presentation of the main ideas and allows more emphases to be placed on the data that belong to the body of the report.
- A report should be in a proper format and must contain appropriate content. It should have a suggestive title, headings, sub-headings and paragraph divisions. The contents of the report should perfectly serve the basic purpose of the report.
- The reporting system of the organization should be designed on the principle of management by exception. Consequently, reports should depict exceptional and abnormal matter.
- The report should contain only that material which is required for the purpose for which it is intended. However, there is a tendency among business firms to make managerial report so general as to cover all possible contingencies. Consequently, the report is so lengthy that its review is deferred or it burdens the executive with detail, thereby obscuring significant data which should command his attention. The result may be failure to take necessary action in time.
- The principle of consistency suggests that a good reporting system should follow a uniform set of procedure over a period of time for the collection and analysis of the economic and accounting data. However, this does not mean that the reporting system should not be improved over the period of time by incorporating necessary changes in it. But the impact on business affairs as a result of a change in the reporting system should be disclosed in the report. Further, it is advisable to present information in a consistent matter to various levels of the management.
- A useful report should make as far as possible a clear distinction between controllable and uncontrollable costs.
- A report must be produced at a cost which is reasonable having regard to the possible benefits from the use of the report.

The above-mentioned principles serve as a guide to effective and efficient managerial reporting. However, a management accountant should not accept these principles as rigid rules of conduct. The main objective is to make each report purposeful.

Types of Reports

The classification of reports differs from industry to industry and from firm to firm in the same industry depending upon the nature of business and the objectives for which information is required. However, the following broad classification of reports is commonly used in actual practice:

NOTES

- external reports;
- internal reports;
- planning reports;
- control reports;
- formal reports; and
- informal reports.

External Reports

The reports meant for the external stakeholders of the business are known as external reports. The external stakeholders may include government agencies, investors, creditors, lenders, investigative agencies, and so on. Such reports are quite expensive and reveal detailed information about various activities of the business. These reports are prepared carefully and hence are costly and time consuming. Though the business is not answerable to external stakeholders yet the Indian Companies Act, 1956, Schedule VI has made it obligatory for all companies to publish their final accounts, that is, profit and loss account and balance sheet, for the information of general public and submit the same to the registrar of companies, as well as to the stock exchanges. This is done to save public from waste and unproductive investments.

Internal Reports

Internal reports are confidential reports which are prepared within the company for internal use only. These reports are prepared to meet the requirement of internal management and not for the use of external parties. Therefore, such reports are not designed in tune to any statutory standard but as per the needs of the internal managers. Internal reports typically are more detailed and are prepared more frequently than external reports. For the purpose of study and discussion, this category of reports can be further subdivided into three classes:

Statistical Reports They are basically accounting reports which are submitted at periodical intervals. Such reports reveal a vital historical statistics concerning various activities of business. These comprise a significant portion of the financial and operating history of the enterprise. For the efficient operation of the business, regular accumulation of data is essential. In well-managed enterprise such reports are prepared monthly.

Special Reports They need special requirements of the management. Such reports are prepared and submitted at a specific request of the management. Usually these reports are required to plan future action. Special reports pay more emphasis on such elements and subjects that seem important to management. Therefore, the form and contents of such reports vary from report to report depending upon the nature of the problem. Typical special reports can be sales analysis, replacement of capital investment, economic forecasts and price spread analysis. They are non-repetitive and mostly non-predictable.

Performance Reports They generally show a combination of performance against standards plus extra allowances due to conditions that are beyond the control of the reports. Such reports, prepared on a monthly basis, follow a fairly standardized format. These reports help the management to facilitate internal control. A selected series of data related to specific responsibility centre are shown in performance reports. The performance reports attempt to compare actual results with goals or budgets. They are designed to highlight both efficient and inefficient performance and identify a problem that demands a special report.

Performance reports must be designed to satisfy the requirements of a particular environment, however, in general certain relevant criteria for their design and application can be framed. Thus, performance reports should be:[2]

- formulated in relation to organizational structure;
- designed to satisfy the principle of management by exception;
- repetitive and should cover short periods;
- specified, simple and understandable;
- prompt and prepared regularly;
- factual and correct; and
- suitable to meet the requirement of principle user.

Planning Reports

Planning reports contain the objectives and goals of the enterprise. Such reports serve as standards against which actual results can be measured. The best example of such reports can be budgets. The planning reports are not much popular among business firms.

Control Reports

Control reports serve as a controlling device to control different activities of an enterprise. Such reports take various forms and reach every management level. They range from records of routine transactions, through many levels of summarization and analysis to comparative and evaluative reports. Control reports reflect the deviation between budgeted and actual performance.

Formal Reports

Formal reports are designed as per the official format of the enterprise. The collection and analysis of data are made strictly as per the norms established for the purpose by the management. In the reporting of the data, formal reporting channels of the organization are engaged.

Informal Reports

Reports that do not contain official documents are referred to as informal reports. Informal reporting involves oral reporting or reporting through the use of notes or

memorandum. This system of reporting pays no attention to the formal reporting system but patterns itself more to the particular needs at hand.

Modes of Reporting

NOTES

The following modes of reporting are commonly used by business firms for managerial reporting:

- Written statements
  - o Formal financial statements
  - o Tabulated statistics
- Graphic/Diagrammatic presentation
  - o Chartered figures
  - o Diagrams and picture
- Oral Reporting
  - o Group conferences
  - o Conversation with individuals

Report Format

The format differs from report to report depending upon the nature, type and scope of report. However, the basic elements in the report format are:

Title Page Title page of the report tells the reader the subject studied, who conducted the study, and for whom the report was prepared. The title must be brief, catchy, and at the same time, state the topic of the study. If the report is confidential, it must be indicated on the cover page with the names of the executives who are to receive a copy of the report, if it is intended for limited circulation.

Preface The preface follows a title page. The users of managerial report usually require a short summary of the information at the top of the report which is covered under the head preface. It contains essential information like purpose, objectives and methods in outline with condensed recommendations and conclusions. This part of the report provides executives an opportunity to know the essentials of the report.

Table of Contents This part of the proposed format states the main divisions and sub-divisions of the report and the corresponding page number. For special reports, it may also include a list of tables and figures and the pages on which they can be located.

Text It contains the report message. It explains a complete set of information about the business affair. The text has direct impact on the management action. It explains in detail the ideas presented in the headline. In addition, pictures, charts and tables are used to make the text of the report meaningful.

Appendix The appendix normally precedes the text of the reports. This part covers the essential information considered redundant or too technical in the text section of the report.

NOTES

Managerial Reporting by Exception

Managerial reporting by exception is a means of using the familiar principle—*management by exception*, by concentrating attention on the significant exceptions to planned results. This is an increasingly popular technique that can be used by any company but tends to have special advantages in companies that use electronic data processing (EDP) for reporting and control. Under exception reporting review, all the available data are performed by employees at a lower level and the exceptions are noted by them for the attention of the management. This system of reporting has the following purposes and objectives:

- eliminate irrelevant information from reports;
- keep the management informed about the unexpected trends; and
- call the attention of higher management to such business areas which cannot be improved at lower levels.

A proper system of exception reporting differs from conventional reporting not only in content but also in timing. There is no fixed schedule for the preparation of the exception reports. Instead, it seeks to alert the management of significant development as soon as they take place, regardless of how little time has elapsed since the last report.

Managerial Reports and their Control

During past few years a huge change is observed in business data, economic conditions and organizational environment. Consequently, additional reports are required for continuous evaluation which results in an increased cost of report preparation, lessening its utilization due to complexity and duplication of various reports.

Further, business statistics in recent years reveal that there has been significant increase in reporting costs of the firms as compared to the benefits arising from the actions taken on the basis of contents of the reports. A modest percentage reduction in reporting costs can have a significant effect upon a company's profit. Therefore, it is the responsibility of a management accountant to identify the areas of cost reduction in reporting.

Perhaps the first step in cutting cost is to review each report and ask how much of it or if any of it is really needed. In other words, does the report's contribution to profit exceed the cost of preparation? The next question about each report is whether all executives receiving this report really need it or whether the number of copies could be reduced. In direct terms there is the cost of extra copies and filing space and effort to be saved. Indirectly, the company can save by cutting the time an executive spends reading reports not pertaining to his functions. An unscientific but rather effective way of finding whether an executive really needs a particular report is to continue to produce the report but stop sending it to him for a while and see if he complains. Certain reports are based on tradition more

than anything else. At the same time, the reason for some reports is merely to provide a defense against possible criticism, rather than for constructive action. It is not possible to say that all reports based primarily on tradition or defensive motives can be eliminated. But there is certainly much opportunity in this area for appropriate cost cutting by a strong minded and objective individual. All above-mentioned measures can be put to action with the help of *'Master Report Control Schedule'* which attempts to analyse and compare essential elements of the different reports. The Master Report Control Schedule may consist of the following elements:

- Brief description of the report;
- Number of copies prepared;
- Preparation procedure;
- Purpose of report;
- Name of executives to whom report is to be circulated;
- The retention period;
- Frequency of the report; and
- Cost of the report.

Further Master Report Control Schedule attempts to find answers to the following questions:

- Is this report necessary?
- Can it be condensed and combined with other reports?
- Are all data pertinent and relevant to the report's purpose and use?
- Is the report being successfully used in making decisions?

Check Your Progress

4. How is reporting different from communication?
5. What are control reports?
6. What happens under the exception reporting review?

2.5 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. Marginal costing is the reporting system that values inventory and cost of sales at its manufacturing variable cost.
2. Statistical analysis in general and sampling theory in particular provides management accountants a scientific method to draw reliable and valid conclusions about the properties of an entire population by studying only a chosen sample of the population.

3. Life cycle costing is a costing approach that considers the sum of all the costs associated which a project during its operational life.
4. Although there may be few characteristics common between reporting and communication, yet they vary both in nature and scope. Reporting is upward feature whereas communication is both upward and downward.
5. Control reports serve as a controlling device to control different activities of an enterprise. Such reports take various forms and reach every management level.
6. Under exception reporting review, all the available data are performed by employees at a lower level and the exceptions are noted by them for the attention of the management.

2.6 SUMMARY

- Management accounting, though a system of accounting for internal use can play a significant role in the functioning of an organization. Some of the steps involved include creation of an organization manual, recruitment of requisite staff, classification of accounts, setting up of accounts for budgetary control, standard costing, etc.
- The following are the tools and techniques of management accounting: financial planning, analysis of financial statement, cost accounting, standard costing, marginal costing, budgetary control, funds flow analysis, management reporting and statistical analysis, etc.
- The emerging tools of management accounting include TQM, JIT, business process reengineering, life cycle costing, theory of constraints, balanced scorecard, value chain analysis, etc.
- Management reporting constitutes an essential element of a comprehensive business planning and control system.
- Management reporting is that part of management control system which provides adequate business information to various levels of management in the form of reports and statement at regular intervals.
- A managerial report is a vehicle for carrying information to different levels of management in the organization.
- The following broad classification of reports is commonly used in actual practice: external, internal, planning, control, formal and informal reports.
- The basic elements of a report include a title page, preface, table of contents, text, and appendix.

NOTES

2.7 KEY WORDS

- **Financial planning:** It is the process of deciding in advance the financial objectives, policies and procedures.
- **Standard costs:** It refers to the predetermined targets against which actual results are evaluated.
- **Management reporting:** It refers to the process of supplying adequate information to the management.

2.8 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. What are the steps involved in the installation of a good management accounting system?
2. Write a short note on the tools of management accounting.
3. What is the significance of management reporting?
4. What are the different modes of reporting?
5. Briefly explain a report format.
6. What is managerial reporting by exception?

Long-Answer Questions

1. Describe the emerging tools of management accounting.
2. Discuss the principles of a good management reporting system.
3. Explain the classification of management reports.
4. Examine managerial reports and their control.

2.9 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice,* 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management,* 4th edition. New Delhi: Vikas Publishing House.

BLOCK - II
FINANCIAL ANALYSIS

UNIT 3 INTRODUCTION TO FINANCIAL STATEMENT ANALYSIS

Structure

3.0 INTRODUCTION

The fundamental, clear and definite understanding of financial statements is recognized as a prerequisite for an accurate, complete and relevant financial decision. However, this does not mean that decision makers like a business executive, commercial or investment banker, or investor, speculator, business counsellor, mercantile creditman, or financial analyst need to master themselves in the preparation of these statements. In fact, qualified financial accountants capable of preparing such statements are available almost everywhere in the world. But the unchallenged ability to interpret these financial statements intelligently and accurately are essential to understand the financial status and performance of a business. In this unit, you will be introduced to the concept of financial statements and financial statement analysis.

3.1 OBJECTIVES

After going through this unit, you will be able to:

- Describe the nature of financial statements
- Discuss the limitations of financial statements
- Explain the steps involved in financial statement analysis

- Examine the objectives and importance of financial statement analysis
- Assess the parties interested in financial statement analysis

3.2 NATURE AND LIMITATIONS OF FINANCIAL STATEMENTS

Financial statements enable a reader not only to measure business results of an organization but also to assess its financial position; hence, they are generally predictive by nature. Such statements contain not only sufficient but also valuable information about the organization that would help managers in decision making. The nature of financial statements was admirably summarized on traditional grounds a number of years ago by the American Institute of Certified Public Accountants, 1936 in the following lines: *Financial statements are prepared for the purposes of presenting a periodical review or report by the management and deal with the status of the investment in the business and the results achieved during the period under review.*

Thus, financial statements are reporting instruments that provide a summary of the accounting data of an organization's business pertaining to a specific accounting period. The objectives of such statements are summarized below:

- To measure an organization's business results and assess its financial position;
- To present true and fair view of the business;
- To reveal implications of operating profit on the financial position of a concern;
- To provide sufficient and relevant financial information to various parties interested in financial statement analysis; and
- To serve as the basis for future planning and strategy.

Generally, financial statements refer to at least two statements which an organization prepares at the end of a given period of time. These statements are:

- Profit and loss accounts; and
- Balance sheet

In addition to the above-mentioned statements, many organizations prepare the following two financial statements in order to strengthen the accounting information system:

- ***Profit and Loss Appropriation Account*** An account that shows the distribution of profit is known as *profit and loss appropriation account*. Generally this account has the same format, *i.e.*, 'T' form, as is followed

in case of profit and loss account. The current profit of the business (that is transferred from profit and loss account) along with the balance of profit, if any, of the previous year appear on the credit side of the account. The debit side of the account shows appropriation transactions like dividend, income tax, general reserve, etc. A specimen of this account is given below:

Profit and Loss Appropriation Account

	₹		₹
Proposed dividend	xxx	Balance at	xxx
Provision for income-tax	xxx	Profit (Transferred from P&L A/c)	xxx
General reserve	xxx		
Balance c/d	xxx		
	xxxx		xxxx

- ***Statement of Changes in Financial Position*** The statement of changes in financial position, often referred to as 'Funds Flow Statement', provides information about the flow of fund (working capital) during a particular period. It also provides information about the financial and investing activities of a business enterprise. Such a statement explains the cause of change in the financial position (balance sheet) from the beginning of the period to the end of the period.

Since the students need to possess knowledge about the nature and structure of profit and loss account and balance sheet before they analyse such statements for a given purpose, in this section of this unit an attempt has been made in this direction.

Profit and Loss Account

Profit and loss account reports the results of business activities for an accounting period. Such an account not only reveals the details of the income and expenditure of a business organization over a period of time but also compare them with each other with an objective to find the deviation which represents the amount of profit or loss for the period. If income exceeds expenditure the difference is called *net profit* and in case expenditure exceeds income, the difference is called *net loss*. Data concerning sales, cost of goods sold, returns and allowances, selling and distribution expenses and net income are normally presented in the profit and loss account. The profit and loss account sometimes is called *income statement* or the *operating statement*.

There is no specific proforma for the preparation of profit and loss account. However, the proforma given below is commonly used for this purpose:

NOTES

ESS BEE Company Ltd.

Profit and Loss Account

(*for the period ended ……..*)

Dr.			Cr.
Particulars	***Amount*** ₹	***Particulars***	***Amount*** ₹
To Purchases	xxx	By Sales	xxx
To Carriage	xxx	By Discount received	xxx
To Establishments	xxx	By Interest received	xxx
To Salaries and wages	xxx	By Commission	xxx
To Insurance	xxx	By Income on investment	xxx
To Printing & Stationery	xxx		
To Advertising	xxx		
To Distribution Charges	xxx		
To Discount	xxx		
To Audit Fee	xxx		
To Repairs	xxx		
To Depreciation	xxx		
To Provision or Reserves	xxx		
To Rent	xxx		
To Net profit	xxx		
(transferred to Capital account)	xxxx		xxxx

The above-given proforma of profit and loss is commonly used by Indian organizations. The name of the concern and the time period for which the account is prepared is written at the top of the account. The body of the account contains details about incomes and expenditures of the concern for the specific period. An accounting system consisting of accounting concepts and principles is used to identify, recognize and measure such incomes and expenditures.

As is evident from the above-mentioned proforma, profit and loss account is divided into two major categories—the left-hand side known as *debit* side and right-hand side called as *credit* side. The profit and loss account is nominal in character, therefore, all expenditures are debited and all incomes are credited. However, expenditure incurred for the future commonly known as *unexpired costs* (assets) like building, plant and machinery costs, land or investments are not reported in the profit and loss account. This reveals that only expired costs related to the current period like cost of goods sold, salaries, rent, and so on are shown in profit and loss account. In the same way, expenses related to the past periods have to be excluded from the profit and loss account. The same procedure is also applied to incomes. Accordingly, incomes received in advance and incomes received in respect of past periods are not included in the computation of profit for the current period, and therefore, are not shown in the profit and loss account.

Since the profit and loss account records transactions on the basis of accrual method, outstanding or accrued expenses and incomes relating to the current period but not yet paid or received are to be reported in profit and loss account.

Balance Sheet

NOTES

The profit and loss account discussed above depicts the income and expenditure for a specific accounting period, but it fails to indicate the position of the organization in terms of its assets and liabilities. To present such an information, an accounting framework is required which is known as the *balance sheet*. The balance sheet is a statement of the financial position of an enterprise as at a given date which exhibits its assets, liabilities, capital, reserves and other account balances at their respective book values (ICAI, 1983).

Thus, balance sheet is a statement which discloses the financial status of an organization consisting of the values assigned to its assets, liabilities, and owner's equity, at a specific time. It contains two sides, viz., liabilities and assets.

Liabilities denote the amount which a business owes to others on different accounts. It represents claims of creditors and equity of the owners. The liabilities are usually divided into three major categories:

- *Current liabilities* represent short-term financial obligations which are expected to be paid within the coming year or the normal operating cycle. Sundry creditors, bills payable and outstanding expenses are the best examples of such liabilities.
- *Long-term liabilities* are liabilities that are not expected to be repaid within the coming year but are of the long-term nature. Thus, it includes debts not falling due until more than a year from the balance sheet date.
- *Owner's equity* represents the amount of liabilities for which owners of a business have claim. It includes share capital and accumulated resources.

Assets are the material things or possessions or properties of business including the amount due to it from others. Assets are usually classified into three major categories:

- *Current assets* represent cash plus those assets that are expected to be converted into cash or consumed during the year or normal operating cycle, e.g., stock, sundry debtors, bills receivable, etc.
- *Fixed asssets* are those assets which are to be used in business operation over a relatively long period of time. Such assets are incidental to production such as land and building, plant and machinery, furniture and fittings, etc.
- *Intangible assets* also known as fictitious assets are not represented by any tangible possession or property. They are debit balances of certain accounts which are not yet written off such as preliminary expenses, patents, goodwill, etc.

Thus, the liabilities side show sources wherefrom funds were obtained while assets side describes the way in which the funds were utilized.

For a clear understanding of the balance sheet, one must be well versed with the concept of business entity which says business has got its own individuality as distinguished from those persons who own, control or otherwise are associated with the business. Such a concept advocates that the organization is liable to those who have advanced money to it, that is, its liabilities are the sums owed by the business to the internal parties (owners) and external parties (creditors) who had advanced money to it. Similarly, its assets would represent the properties and services owned or brought by the business with the funds advanced. Thus, the balance sheet is a representation of the accounting equation*:

Assets = Liabilities + Capital

A proforma of the balance sheet is given below:

ESS BEE Co. Ltd.

Balance Sheet as on …

Liabilities		*Amount* ₹	*Assets*	*Amount* ₹
Capital			*Fixed Assets*	
Issued capital	xxx		Land	xxx
Retained profits	xxx		Building	xxx
Owner's Equity		xxxx	Machinery	xxx
Loans		xxx	*Current Assets*	
Trade Creditors		xxx	Stock	xxx
Overdraft		xxx	Debtors	xxx
Taxation		xxx	Cash	xxx
		xxxx		xxxx

Limitations of Financial Statements

Financial statements suffer from the following limitations:

- Since financial statements are historical in nature, they contain financial data about the past and fail to reflect on the future.
- Financial statements fail to throw light on non-monetary facts of the business despite the fact that they play an important role in the profitability of the concern. Facts like competition, conflict, loyalty, etc., directly influence the concern's profitability but cannot be expressed in monetary units, and therefore, are ignored in financial statements.
- Financial statements are prepared for a particular financial period, and therefore, such statements are essentially interim reports which do not depict the exact business position. Such a position can be only known at the time of closure of the business.
- A financial statement is as nearly as the accountant can make it so. Therefore, such statements are influenced by his personal judgements which definitely affect the quality and utility of the statements.

- Financial statements fails to reflect the true and fair view of the business as the preparation of the statements is governed by various accounting concepts and conventions which suffer from many drawbacks. For example, assets are to be recorded at cost rather than their realisable value which definitely hides the real positions of the concern.

Check Your Progress

1. List some of the transactions which are shown on the debit side of the Profit and Loss Appropriation Account.
2. Mention some of the other names for the Profit and Loss Account.
3. What are some of the factors which affect a concern's profitability but cannot be expressed in monetary units?

3.3 ANALYSIS AND INTERPRETATION OF FINANCIAL STATEMENTS

Like lines in the palm or horoscope, financial statements can be studied, puzzled over, and scrutinized (Woelfel, 1980). The analysis of such statements provide valuable information for managerial decisions. Financial statement is—as nearly as the financial executive can make it so—simply a report of facts. The utility of the statement does not lie in the amount of information it contains but in the expertise and the skill of the analyst to analyse and interpret the information in the statement in order to get the story behind the facts—to read between the lines. Financial statement does not speak anything in and of itself. It merely contains financial data about business events. The user gains meaningful insights and conclusions about the firm only through his own analysis and interpretation of the information in the statements (Woelfel, 1908).

Financial statement analysis involves a systematic and careful examination of the information contained in the financial statements with a definite purpose. It is a detailed inquiry into financial data to evaluate an organization's performance, future risks and potential. It attempts to determine the significance and meaning of the business information as depicted by financial statements so that prospects for future earnings, ability to pay interest and debt maturities (both current and long-term) and profitability of a sound dividend policy may be forecast. According to Myer, 1969 Financial statement analysis is largely *a study of relationships among the various financial factors in a business, as disclosed by a single set of statements and study of these factors as shown in a series of statements.*

Thus, financial statement analysis is a process of analysing the financial data in order to judge the profitability and financial position of an organization. It is the evaluation of the economic and financial data presented in the financial statements for making decisions and maintaining control.

Steps Involved in Financial Statements Analysis

The process of financial statement analysis consists of the following six steps:

- determination of scope and objectives of analysis;
- study of financial statements;
- collection of relevant information;
- rearrangement of the data;
- analysis of data by analytical techniques; and
- interpretation, presentation and preparation of reports.

Objectives and Importance of Financial Analysis

Financial statement analysis performs the essential function of converting mass data into useful information. Such analysed financial information serves many and varied purposes, as described below:

1. **Judging profitability:** Profitability is a measure of the efficiency and success of a business enterprise. A company which earns profits at a higher rate is definitely considered a good company by the potential investors. The potential investors analyse the financial statements to judge the profitability and earning capacity of a company so as to decide whether to invest in a company or not.
2. **Judging liquidity:** Liquidity of a business refers to its ability to pay off its short-term liabilities, when they become due. Short-term creditors, like trade creditors and bankers, make an assessment of liquidity before granting credit to the company.
3. **Judging solvency:** Solvency refers to the ability of a company to meet its long-term debts. Long-term creditors, like debenture-holders and financial institutions, judge the solvency of a company before any lending decisions. They analyse company's profitability over a number of years and its ability to generate sufficient cash to be able to repay their claims.
4. **Judging the efficiency of management:** Performance and efficiency of management of a company can be easily judged by analysing its financial statements. Profitability of a company is not the only measure of company's managerial efficiency. There are a number of other ways to judge the operational efficiency of management. Financial analysis tells whether the resources of the business are being used in the most effective and efficient way.
5. **Inter-firm comparison:** A comparative study of financial and operating efficiency of different firms is possible only after proper analysis of their financial statements. For this purpose, it is also necessary that the financial statements are maintained on a uniform basis so that financial data of various firms are comparable.

6. **Forecasting and budgeting:** Financial analysis is the starting point for making plans by forecasting and preparing budgets. Analysis of the financial statements of the past years helps a great deal in forecasting for the future.

Qualifications of a Financial Analyst

To be qualified to analyse financial statements, the analyst should be clear and familiar with:

- business systems and practices;
- purpose, nature and limitation of accounting system of the concern;
- accounting terminology; and
- tools and techniques of analysis.

The analysis and interpretation of a financial analyst would be more meaningful and accurate, if he possesses knowledge about the following:

Firm's Financial History: Financial statements contain information in a condensed form, therefore, the analyst requires a detailed knowledge about firm's financial history in order to draw proper conclusions from the financial statement analysis.

Depreciation and Inventory Policies: The analyst cannot analyse the financial statements in the right perspective unless he is aware of the firm's accounting procedure, particularly he must be clear about depreciation and inventory costing policies as in vogue in the organization.

Location and Type of Company: Specific financial tests and tools may span a wide range of acceptability, depending on such features as the geographic location or the type of industry in which the firm is located. The analyst must be aware of the effect of location and nature of industry in analysing financial statements.

Non-financial Items or Variables: An analyst should be able to measure the impact of non-financial items on financial performance. These variables may include:

- calibre, reputation and creativity of the management;
- public relations;
- labour – management; and
- research and development facilities.

Parties Interested in Financial Statement Analysis

Generally speaking, every segment of the society is directly or indirectly interested in the analysis of financial statements. Although every stakeholder is interested in the financial position and operating results of the organization, the primary information that each seeks to obtain from these statements differs materially, reflecting the purpose that the statement is to serve. However, it is practically impossible that a set of financial statements will satisfy the precise needs of each group. Financial statements are, therefore, general purpose statements intended to serve the various needs of general stakeholders as discussed below.

NOTES

Owners have an obvious interest in the analysis of financial statements as they assume the primary risk of business by investing their money. This group requires information periodically on how their investment is performing and whether or not their continued investment in a particular company is justified. The owners, in fact, need periodic reports to find answers to various questions relating to profitability and financial position of the organization.

Creditors are individuals, agencies or institutions who extend credit facilities to a firm. They are primarily concerned not only with the safety of their investment in the borrowing firm but also in the prompt receipt of interest when due and the collection of the loan on the schedule date. Therefore, the money-lending institutions are interested in knowing whether a firm that seeks financial resources has the ability to meet its obligations as they mature. For this purpose, the lending institution usually investigates the credit standing of the firm, its past and projected earnings, and the size of the requested loan in relation to the firm's financial structure.

Management depends heavily on the financial and managerial reports in order to formulate company policies, establish organizational objectives, evaluate company's performance and its employees, and make other related decisions. In order to plan and control business operations efficiently, functional managers require accurate and current financial information pertinent to specific areas of responsibility. For this purpose, managers have to use both internal as well as external reports.

Employees are also interested in the company's financial position and its operations. They make frequent use of available information to gain insights into such matters as fringe benefits, salary determination and working conditions. Prospective employees prior to accepting a position frequently investigate the company's past earnings record and other related information that appear in its financial statements.

Government—central, state and local government agencies—become increasingly interested in the internal operations of business enterprises. They use financial statements to ensure that the company is meeting its various legal obligations.

Financial analysts are experts in the study of the financial information. Their responsibility is to assemble and examine volumes of financial information for use by their clients for investment decision-making purposes.

Institutional investors such as mutual investment companies, banks, insurance firms and trustees of large estates normally employ their own staff for financial analysis who serve as advisors to the institutions' management on investment opportunities.

Investors in a business learn a great deal about a company from its financial statements. An investor would like to be clear about the nature and prospectus of investment opportunity offered by a particular business before he commits his money to it. The most significant aspect of such an investigation is the analysis of the growth potential of the firm and its earning trend as compared to its competitors.

Investors desire primarily a basis for estimating earning capacity and the rate at which the capital is utilized.

NOTES

Types of Financial Analysis

The methods of financial analysis are divided into different types: horizontal, vertical, internal and external.

Horizontal and Vertical Analysis

In horizontal analysis, financial date of two or more years of the company is presented horizontally in a number of columns in comparative form. *Comparative financial statements* and *trend percentages* are types of horizontal analysis.

Vertical analysis covers a period of only one year and analysis is made on the basis of one set of financial statements. *Common size financial statements* and *ratio analysis* are the techniques employed in vertical analysis.

Internal and External Analysis

In external analysis the outside parties including the likes of government agencies, suppliers, creditors, investors etc. undertake a study based on the reports and information published by the management itself. They have no access to internal records and accounting policies.

Internal analysis is undertaken by the management of the company, to analyse their performance vis a vis the set objectives. This type of analysis is slightly more reliable as it based on the internal policies and reports.

Check Your Progress

4. What does a financial statement analysis attempt to determine?
5. Who are interested in judging the liquidity of a firm?
6. Give some examples of vertical analysis.

3.4 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. The debit side of the Profit and Loss Appropriation Account shows transactions like dividend, income tax, general reserve, etc.
2. Some of the other names for the Profit and Loss Account are income statement or the operating statement.
3. Competition, conflict, loyalty, etc., are some of the factors which directly influence a concern's profitability but cannot be expressed in monetary units.
4. A financial statement analysis attempts to determine the significance and meaning of the business information as depicted by financial statements so

NOTES

that the prospects for future earnings, ability to pay interest and debt maturities and profitability of a sound dividend policy may be forecast.

5. Short-term creditors, like trade creditors and bankers, are interested in making an assessment of liquidity before granting credit to the company.
6. Common size financial statements and ratio analysis are examples of vertical analysis.

3.5 SUMMARY

- The fundamental, clear and definite understanding of financial statements is recognized as prerequisite for an accurate, complete and relevant financial decision.
- Financial statements are the instrumental panels of a business which provide a summary of the accounts of a business organization.
- An account that shows the distribution of profit is known as profit and loss appropriation accounts.
- The statement of changes in financial position often referred to as the funds flow statement, provides information about the flow of fund (working capital) during a particular period.
- Profit and loss account reports the results of business activities for an accounting period.
- Balance sheet is a statement which discloses the financial status of the enterprise, consisting of the values assigned to its assets, liabilities and owner's equity, at a specific time.
- Financial statement analysis involves a systematic and careful examination of the information contained in the financial statements with a specific purpose.
- Financial statement analysis performs several essentials functions include judging profitability, liquidity, solvency, efficiency of management, inter-firm comparison and forecasting and budgeting.
- Various stakeholders in the financial statement analysis include owners, creditors, management, employees, government, financial analysts, investors, etc.
- The methods of financial analysis are divided into different types: horizontal, vertical, internal and external.

3.6 KEY WORDS

- **Financial statements:** It refers to the reporting instruments that provide a summary of the accounting data of an organization's business pertaining to a specific accounting period.

- **Profit and Loss appropriation account:** It is an account that shows the distribution of profit.
- **Financial statement analysis:** It is a process of analysing the financial data in order to judge the profitability and financial position of an organization.
- **Solvency:** It refers to the ability of a company to meet its long-term debts.

3.7 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. List the objectives of financial statements.
2. What are profit and loss appropriation account and statement of changes in financial position?
3. What are the limitations of financial statements?
4. List the steps involved in financial statements analysis.
5. Write a short note on the types of financial analysis.

Long-Answer Questions

1. Describe the preparation of profit and loss account and balance sheet.
2. Examine the importance of financial analysis and the qualification of a financial analyst.
3. Discuss the parties interested in financial statement analysis.

3.8 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice*, 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management*, 4th edition. New Delhi: Vikas Publishing House.

NOTES

UNIT 4 FINANCIAL STATEMENT ANALYSIS-METHODS AND CRITICISM

Structure

4.0 INTRODUCTION

Every company wants to ensure that the future is profitable. For achieving this goal, the current financial position as well as the past performance needs to be analysed. This will help in finding out the areas of error, so that they can be dealt with and there can be some level of certainty as to the future decisions being soundly backed. Financial statement analysis helps with this critical analysis of the items featured in them. Financial statement analysis is crucial for the management accountant to help identify relationships between different items of the financial statements, so that just conclusions can be arrived at. In the previous unit, you were introduced to the concepts of financial statements and the basics of financial statement analysis. In this unit, you will learn about two such techniques of financial statement analysis: comparative statements and common size statements.

4.1 OBJECTIVES

After going through this unit, you will be able to:

- Describe the preparation of comparative statements
- Explain the common size statements
- Discuss the criticism of published accounts and cost accounting

4.2 COMPARATIVE STATEMENTS

NOTES

Any financial statement that reports the comparison of data for two or more consecutive accounting periods is known as comparative financial statement. Commenting on the nature of comparative financial statements Foulke, 1961 states that such statements which basically reveal the financial position of the business are designed in such a form as to provide time prospective to the consideration of various elements of financial position embodied in such statements.

In fact, comparative financial statements highlight trends and establish relationship between items that appear on the same row of the statement. Such statements disclose changes in the items of the statement with time in both rupees and percentage. Each item (such as debtors) on a row for one fiscal period is compared with the same item in a different period. The analyst calculates the absolute changes—the difference between the figures of one year and the next—and also the percentage change from one year to the next, using the earlier year as the base year. Much valuable information is obtained from financial statements in this manner. The comparative study helps an analyst to identify and examine the key factors which have affected profitability or the financial position of the organization.

Illustration 4.1 From the following balance sheet of Saher Ltd. prepare a comparative balance sheet and comment on the financial position of the concern.

Saher Ltd.
Balance Sheet

Liabilities	*2011* ₹	*2012* ₹	*Assets*	*2011* ₹	*2012* ₹
Equity shares	2,20,000	2,50,000	Buildings	1,40,000	1,70,000
Debentures	1,00,000	1,20,000	Machinery	1,20,000	1,50,000
Reserves and surplus	60,000	80,000	Furniture	60,000	40,000
Sundry creditors	40,000	25,000	Sundry debtors	40,000	60,000
Bills payable	35,000	40,000	Marketing Securities	55,000	30,000
Outstandings	20,000	–	Stock	40,000	55,000
(Misc. exp)			Cash balances	20,000	10,000
	4,75,000	5,15,000		4,75,000	5,15,000

NOTES

Solution

Comparative Balance Sheet

(*As on 31st December, 2011 and 2012*)

Particulars	*31st December*		*Increase or Decrease in Amount*	*Increase or Decrease in Percentage*
	2011 ₹	*2012* ₹	₹	₹
Assets				
A. *Current Assets*				
Sundry debtors	40,000	60,000	+ 20,000	+ 50.00
Marketable securities	55,000	30,000	– 25,000	– 45.45
Stock	40,000	55,000	+ 15,000	+ 37.50
Cash balances	20,000	10,000	– 10,000	– 50.00
Total (A)	1,55,000	1,55,000	–	–
B. *Fixed Assets*				
Buildings	1,40,000	1,70,000	+ 30,000	+ 21.43
Machinery	1,20,000	1,50,000	+ 30,000	+ 25.00
Furniture	60,000	40,000	– 20,000	– 33.33
Total (B)	3,20,000	3,60,000	+ 40,000	+ 12.50
Total Assets (A + B)	4,75,000	5,15,000	40,000	8.42
Liabilities				
C. *Current Liabilities*				
Sundry creditors	40,000	25,000	– 15,000	– 37.50
Bills payable	35,000	40,000	+ 5,000	+ 14.29
Outstanding (Misc. exp)	20,000	–	– 20,000	– 100.00
Total (C)	95,000	65,000	– 30,000	– 31.58
D. *Long-term Liabilities*				
Equity shares	2,20,000	2,50,000	+ 30,000	+ 13.64
Debenture	1,00,000	1,20,000	+ 20,000	+ 20.00
Reserves and surplus	60,000	80,000	+ 20,000	+ 33.33
Total (D)	3,80,000	4,50,000	+ 70,000	+ 18.42
Total Liabilities (C + D)	4,75,000	5,15,000	+ 40,000	+ 8.42

Interpretation

The analysis of the above comparative balance sheet (*see* Illustration 4.1) reveals that the monetary balance in each account has increased between the end of 2011 and 2012 with an exception of marketable securities, cash balances, furniture, sundry creditors and outstanding. The significant changes which have occurred in specific balance sheet accounts during the two-year period are:

- There is 50 per cent increase in sundry debtors, 37.5 per cent increase in stock, 45.45 per cent decrease in marketable securities and 50 per cent decrease in cash balances. Slower paying customers and/or slower moving merchandise might be responsible for the changes.

NOTES

- There has been no change in the amount of current assets during the two periods but current liabilities have decreased by 31.58 per cent. This change has contributed to the liquidity of the company.
- There has been increase in share capital and debentures by 13.64 per cent and 20 per cent, respectively. All this might be due to fresh issue of shares and debentures.
- The increase in fixed assets during the two periods has been 12.5 per cent. The increase in fixed assets does not sound financially sound when compared with the amount of current assets that has remained constant during the period under study.

Illustration 4.2 The income statements of a concern are given for the years ending on 31st December, 2011 and 2012. You are required to prepare a comparative income statement and interpret the changes.

Income Statements for the Year Ending 2011 and 2012

Particulars	*2011* ₹	*2012* ₹
Sales	6,50,000	7,25,000
Cost of sales	4,25,000	5,00,000
Gross Profit	2,25,000	2,25,000
Operating Expenses:		
Selling & Distribution Exp.	60,000	75,000
General Expenses	25,000	40,000
Total Operating Expenses	85,000	1,15,000
Net profit during the year	1,40,000	1,10,000

Solution

Comparative Income Statement

(for the year ended 31st December, 2011 and 2012)

Particulars	*31st December*		*Increase or Decrease in Amount* ₹	*Increase or Decrease in Percentage* ₹
	2011 ₹	*2012* ₹		
Net sales	6,50,000	7,25,000	+ 75,000	+ 11.54
Less: Cost of goods sold	4,25,000	5,00,000	+ 75,000	+17.65
Gross Profit	2,25,000	2,25,000	–	–
Operating Expenses:				
Selling & distribution expenses	60,000	75,000	+ 15,000	+ 25.00
General Expenses	25,000	40,000	+ 15,000	+ 60.00
Total Operating Expenses	85,000	1,15,000	+ 30,000	+ 35.29
Operating Profit	1,40,000	1,10,000	– 30,000	– 21.43

NOTES

Interpretation

A cursory study of the above comparative income statement (*see* Illustration 4.2) reveals the following:

- There is significant change in the operating profit in comparison to other items of the income statement as it has declined by 21.43 per cent during the period under study.
- Although the amount of net sales has increased by 11.54 per cent during the period under study yet the cost of goods sold has increased by 17.65 per cent that has neutralized the benefit gained from the increase in sales. Consequently, the amount of gross profit has remained constant.
- The increase in operating expenses during the period which has been registered an increase of 35.29 per cent is due to increase in selling and distribution, and general expenses which have registered an increase of 25 per cent and 60 per cent, respectively during the period.

4.3 COMMON SIZE STATEMENTS

Financial statements that depict financial data in the shape of vertical percentage are known as common size statements. Since such statements provide the readers with a vertical analysis of the items of profit and loss account and balance sheet, the values of the items are converted into a common unit by expressing them as a percentage of a key figure in the statement. Therefore, the total of financial statement is reduced to 100 and each item of the statement is shown as a component of the whole. For example, in profit and loss account, the value of each item is expressed as a percentage of sales. In the same way, the assets and liabilities can be shown as percentage of total assets and total liabilities, respectively, in a common-sized balance sheet. Since in common size statements each monetary item of the financial statement is expressed as a percentage of the sum total of which that item is a part, such an attempt is referred to as common size statement. Consequently, such statements not only show the relative significance of the items contained in the financial statements but also facilitates comparison. Common size statements are recognized as valuable management tool as they reveal both efficiencies and inefficiencies that are otherwise difficult to identify. However, a common size statement is especially useful when data for more than one year are used.

Illustration 4.3 The balance sheets of Shaheen Ltd. are given for the year 2011 and 2012. Convert them into common-sized balance sheet and interpret the changes.

NOTES

Balance Sheet

Liabilities	*2011* ₹	*2012* ₹	*Assets*	*2011* ₹	*2012* ₹
Equity share	1,46,800	1,91,000	Buildings	1,80,000	2,00,000
Capital reserve	50,000	70,000	Plant and Machinery	40,000	55,000
Revenue reserve and surplus	20,000	30,000	Furniture	10,000	20,000
Trade creditors	30,000	40,000	Freehold Property	20,000	12,000
Bills payable	80,000	60,000	Goodwill	25,000	30,000
Bank overdraft	90,000	80,000	Cash balance	25,000	20,000
Provisions	30,000	20,000	Sundry Debtors	30,000	35,000
			Inventories	70,000	57,000
			Investment (temporary)	36,500	42,000
			Bills receivable	10,300	20,000
	4,46,800	4,91,000		4,46,800	4,91,000

Solution

Common-size Balance Sheet

(*as on 31st December 2011 and 2012*)

	2011 Amount ₹	*Percentage*	*2012 Amount* ₹	*Percentage*
Assets				
A. *Current Assets:*				
Cash balances	25,000	5.59	20,000	4.07
Sundry debtors	30,000	6.71	35,000	7.13
Inventories	70,000	15.67	57,000	11.60
Investments (Temporary)	36,500	8.17	42,000	8.55
Bills receivable	10,300	2.30	20,000	4.08
Total (A)	1,71,800	38.44	1,74,000	35.43
B. *Fixed Assets:*				
Building	1,80,000	40.29	2,00,000	40.75
Plant and machinery	40,000	8.95	55,000	11.20
Furniture	10,000	2.24	20,000	4.07
Freehold property	20,000	4.48	12,000	2.44
Goodwill	25,000	5.60	30,000	6.11
Total (B)	2,75,000	61.56	3,17,000	64.57
Total Assets (A + B)	4,46,800	100.00	4,91,000	100.00
Liabilities				
C. *Current Liabilities:*				
Trade creditors	30,000	6.71	40,000	8.15
Bills payable	80,000	17.91	60,000	12.22
Bank overdraft	90,000	20.14	80,000	16.29
Provisions	30,000	6.71	20,000	4.07
Total (C)	2,30,000	51.47	2,00,000	40.73
D. *Long-term Liabilities:*				
Equity share	1,46,800	32.86	1,91,000	38.90
Capital reserve	50,000	11.19	70,000	14.26
Revenue reserve and surplus	20,000	4.48	30,000	6.11
Total (D)	2,16,800	48.53	2,91,000	59.27
Total Liabilities (C + D)	4,46,800	100.00	4,91,000	100.00

NOTES

Interpretation

- The study of the above common size balance sheet (*see* Illustration 4.3) shows that 61.56 per cent of the total assets in 2011 were fixed. This percentage increased to 64.57 per cent in 2012. If the organization requires considerable investment in fixed assets, these percentages might be acceptable. However, if the organization needs liquid assets, the interested parties might have cause to be concerned about the decreasing trend of liquidity.
- There has been a major shift from the use of creditors' provided funds to the use of owner's equity funds. In 2011, external equity (current liabilities) and owner's equity (long-term liabilities) accounted for 51.47 per cent and 48.53 per cent, respectively, of the total equities. In 2012, these percentages changed to 40.73 per cent for external equities and 59.27 per cent for owners' equity. These changes indicate that the organization has used more internal sources than external sources in the generation of funds for the business during the period under study.
- The organization has not only succeeded in reducing its current liabilities from 51.47 per cent in 2011 to 40.73 per cent in 2012 of their respective total equities but it has also increased the percentage of its revenue reserve and surplus from 4.48 per cent in 2011 to 6.11 per cent in 2012 of their respective total equities.

Illustration 4.4 From the income statement given below, you are required to prepare a common-sized Income Statement.

Income Statements

*(*for the year ending 31st Dec, 2011 & 2012*)*

Particulars	*2011* ₹	*2012* ₹
Sales	1,40,000	1,65,000
Less: Cost of goods sold	85,000	1,05,000
Gross Profit	55,000	60,000
Operating Expenses:		
Selling & Distribution expenses	12,000	16,000
Administrative expenses	10,000	11,000
Total Operating Expenses	22,000	27,000
Net income before tax	33,000	33,000
Income-tax (40%)	13,200	13,200
Net Income	19,800	19,800

NOTES

Solution

Common Size Income Statement

(*for the year ending 2011 and 2012*)

Particulars	*2011*		*2012*	
	Amount ₹	*Percentage*	*Amount* ₹	*Percentage*
Sales	1,40,000	100.00	1,65,000	100.00
Less: Cost of sales	85,000	60.72	1,05,000	63.63
Gross Profit	55,000	39.28	60,000	36.37
Operating Expenses:				
Selling & distribution expenses	12,000	8.57	16,000	9.70
Administrative expenses	10,000	7.14	11,000	6.67
Total Operating Expenses	22,000	15.71	27,000	16.37
Net Income before tax	33,000	23.57	33,000	20.00
Income-tax (40%)	13,200	9.42	13,200	8.00
Net Income after tax	19,800	14.15	19,800	12.00

Interpretation

The study of the above-mentioned common size income statement (*see* Illustration 4.4) reveals the following facts:

- Out of every rupee of sales 60.72 per cent in 2011 and 63.63 per cent in 2012 accounted for cost of goods sold.
- The percentage ratio of gross profit to sales was 39.28 per cent in 2011 and the same was reduced to 36.37 per cent in 2012.
- The operating expenses increased from 15.71 per cent of sales in 2011 to 16.37 per cent in 2012. All this reduced the percentage ratio of net income after tax to sales from 14.15 per cent in 2011 to 12 per cent in 2012.

In the ultimate analysis, it can be concluded that the operating efficiency of the organization has not been satisfactory during the period under study.

Comparative Statement Versus Common Size Statement

Although both statements aims to help managers in decision making yet they differ both in terms of format and approach. The major differs between the two statements are summarized in Table 4.1.

Table 4.1 Comparison of Comparative Statement and Common Size Statement

NOTES

Areas of Comparison	*Comparative Statement*	*Common-size Statement*
Approach	• Discloses changes in the items of a financial statement over time in both rupees and percentage form.	• Converts items of a financial statement to a common unit by expressing them as a percentage of a key figure in the statement.
Type of Analysis	• Since it studies the same item related to two consecutive periods, it is recognized as horizontal analysis.	• As the study involves a single financial period, it is known as vertical analysis.
Popularity	• Highly popular among the business firms.	• Few firms prefer to use this analysis; hence, it has limited application.
Requirements	• Calls for the financial statements related to two consecutive financial periods.	• Needs financial statements of a single financial period.
Significance of Items	• Fails to indicate the significance of an item of a financial statement as a component of a key figure in the statement.	• Highlights the significance of each item of a financial statement as a component of a key figure in the statement.

4.4 CRITICISM OF PUBLISHED ACCOUNTS AND COST ACCOUNTING

Published accounts refer to the final accounts of the company which are audited and then published or sent to the key stakeholders. Even though, you have already learnt about the limitations of financial statements in the previous unit, let's briefly recapitulate the criticism against it:

- It is provided in a summary form, which is to say in a single snapshot. This is not particularly useful as it gives very less information. If the stakeholder does want deeper information or conduct a better analysis, he/she will require additional data.
- It is called backward looking since it is historical information. Unlike management accounts, the published accounts do not present information which is useful for predicting future trends.
- It presents information, which is only financial in nature, i.e., in monetary form. Crucial non-financial indicators like customer service, skill level of the staff, etc. are not revealed.
- Human aspect which is in the form of human resource is not mentioned in the published accounts. These are the true source of information about the well-being of the company and its operations.
- Information provided is not too detailed as it might be of use to the competition, this means, critical indicators of the company's workings are not available for analysis.

- There are chances that companies use what is known as 'creative accounting or window dressing' to manipulate the data and present a favourable picture and therefore these are not singularly reliable for gauging the performance of the company.

Check Your Progress

1. In which form do comparative statements disclose change in the items of the statement with time?
2. Why are common size statements recognized as valuable management tool?
3. Which out of the two techniques of financial statements are popular among business firms?

4.5 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. The comparative statements disclose changes in the items of the statement with time in both rupees and percentages.
2. Common size statements are recognized as valuable management tool as they reveal both efficiencies and inefficiencies that are otherwise difficult to identify.
3. Comparative statements are the techniques of financial statements which are highly popular among business firms.

4.6 SUMMARY

- Any financial statement that reports the comparison of data for two or more consecutive accounting periods is known as comparative financial statement.
- Comparative financial statements highlight trends and establish relationship between items that appear on the same row of the statement.
- The comparative study helps an analyst to identify and examine the key factors which have affected profitability or the financial position of the organization.
- Financial statements that depict financial data in the shape of vertical percentage are known as common size statements.
- Common size statements not only show the relative significance of the items contained in the financial statements but also facilitates comparison.
- A common size statement is especially useful when data for more than one year are used.

NOTES

4.7 KEY WORDS

- **Comparative financial statement:** It refers to any financial statement that reports the comparison of data for two or more consecutive accounting periods.
- **Horizontal analysis:** It is a type of financial analysis in which financial date of two or more years of the company is presented horizontally in a number of columns in comparative form.
- **Common size statement:** It is a financial statement that depicts financial data in the shape of vertical percentage.
- **Vertical analysis:** It is a type of financial analysis which covers a period of only one year and analysis is made on the basis of one set of financial statements.

4.8 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. Write a short note on comparative financial statements.
2. Compare comparative financial statements with common size balance sheet.
3. How are common size statements prepared?

Long-Answer Questions

1. The following are the balance sheets of a concern as on 31st December, 2011 and 2012.

Liabilities	*2011* ₹	*2012* ₹	*Assets*	*2011* ₹	*2012* ₹
Sundry creditors	55,000	83,000	Cash	25,000	18,000
Bills payable	20,000	16,000	Sundry debtors	1,60,000	2,00,000
Provision for taxation	40,000	50,000	Bills receivable	20,000	30,000
Proposed dividend	42,000	50,000	Stock in trade	77,000	1,09,000
6% Debentures	1,50,000	1,00,000	Machinery	80,000	2,00,000
General reserve	40,000	70,000	Building	2,00,000	1,70,000
Profit and loss A/c	30,000	48,000	Goodwill	1,15,000	90,000
Capital	3,00,000	4,00,000			
Total	6,77,000	8,17,000		6,77,000	8,17,000

Prepare a comparative balance sheet of the concern and study its financial position.

2. From the following information prepare a comparative statement and make brief comments

Income Statements

(*for the year ended 31st March 2011 and 2012*)

Particulars	*2011* ₹	*2012* ₹
Sales	2,80,000	3,10,000
Less: Cost of goods sold	1,92,000	2,22,000
Gross Profit	88,000	88,000
Less: Administrative expenses	15,000	12,000
Selling & distribution expenses	18,000	18,000
Total Operating Expenses	33,000	30,000
Net income before tax	55,000	58,000
Less: Tax (40%)	22,000	23,200
Net Income after Tax	33,000	34,800

3. Convert the following balance sheets into common size balance sheet and make brief comments

Balance Sheets

(*as on 31st March 2011 and 2012*)

Liabilities	*2011* ₹	*2012* ₹	*Assets*	*2011* ₹	*2012* ₹
Share capital	5,00,000	6,50,000	Machinery	2,80,000	3,20,000
6% Debentures	3,40,000	2,00,000	Building	3,50,000	3,50,000
Sundry creditors	1,60,000	67,000	Investment	2,40,000	2,65,000
Provision for doubtful debts	4,500	3,000	Goodwill	70,000	55,000
Profit & loss A/c	75,500	1,65,000	Bank balance	40,000	30,000
			Inventory	60,000	40,000
			Bills receivable	40,000	25,000
	10,80,000	10,85,000		10,80,000	10,85,000

Following income statements of a business are given for the years ending 31st December, 2011 and 2012. Prepare a common size statement and make comments on the business results.

NOTES

Income Statements

(*for the years ending on* 31*st Dec*, 2011 *and* 2012)

Particulars	*2011* ₹	*2012* ₹
Gross sales	7,20,000	8,40,000
Sales returns & allowances	40,000	50,000
Net Sales	6,80,000	7,90,000
Cost of goods sold	5,00,000	5,80,000
Gross Profit from Sales	1,80,000	2,10,000
Operating Expenses		
Selling Expenses:		
Advertising expenses	10,000	12,000
Sales salaries	12,000	16,000
Delivery expenses	7,000	5,000
Depreciation expenses	10,000	16,000
Total Selling Expenses	39,000	49,000
General and Administrative Expenses:		
Office salaries	50,000	75,000
Insurance	20,000	35,000
Depreciation	5,000	16,000
Bad debts	3,000	12,000
Total General and Administrative Expenses	78,000	1,38,000
Total Operating Expenses	1,17,000	1,87,000
Operating Income	63,000	23,000

4.9 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice,* 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management,* 4th edition. New Delhi: Vikas Publishing House.

UNIT 5 RATIO ANALYSIS: SIGNIFICANCE AND USES

NOTES

Structure

5.0 INTRODUCTION

This unit continues financial statement analysis by focusing on financial ratios. Ratio analysis is one of the popular tools of financial statement analysis. Such an analysis aims to reduce the large number of items involved to a relatively small set of readily comprehended and economically meaningful indicators. However, given the large number of ratios available, it is difficult to discern the inter-relationships among them required for a comprehensive understanding of the entity being analysed. What is required is an integrated system of financial ratios which will incorporate the essential ratios and highlight the inter-relationships among them.

5.1 OBJECTIVES

After going through this unit, you will be able to:

- Explain the meaning of ratio analysis
- Discuss the objectives of ratio analysis
- Describe the important managerial uses of ratio analysis

5.2 MEANING OF RATIO ANALYSIS

In simple words, a ratio is the quotient formed when one magnitude is divided by another measured in the same unit. A ratio is defined as *the indicated quotient of two mathematical expressions* and as *the relationship between two or more things*. Usually the ratio is stated as a percentage, *i.e.*, distribution expenses might be stated as 20 per cent of sales. Often, however, the ratio is expressed in units,

thus sales might be expressed as 20 times inventory. Thus, the ratio is a pure quantity or number, independent of the measurement units being used.

A financial ratio is defined as a *relationship between two variables taken from financial statements of a concern*. It is a mathematical yardstick which measures the relationship between two financial figures. It involves the breakdown of the examined financial report into component parts which are then evaluated in relation to each other and to exogenous standards.

As the ratio represents a relationship between figures, a number of ratios can be formed by taking any two figures from the financial statements. However, such an approach would not fulfill any purpose unless the figures chosen are significantly correlated with each other. Furthermore, many of the ratios tend to deal with different aspects of the same relationship, and there is little point in calculating several ratios in order to investigate the same point. Experts have identified some ratios as significant and important since they throw considerable light on the financial position of a concern.

Interpretation of Ratio

One of the most difficult problems confronting the analyst is the interpretation and analysis of financial ratios. An adequate financial analysis involves more than an understanding and interpretation of each of the individual ratios. Furthermore, the analyst requires an insight into the meaning of inter-relationships among the ratios and financial data in the statements. Gaining such an insight and understanding requires considerable experience in the analysis and interpretation of financial statements. Moreover, even experienced analyst cannot apply their skill equally well to analyse and interpret the financial statements of different organizations. The characteristics may differ from industry to industry and from firm to firm within the same industry. A ratio that is high for one firm at one time may be low for another firm or for the same firm at a different time. Therefore, the analyst must be familiar with the characteristics of the firm of which he is interpreting the final ratios.

The analyst must not undertake the interpretation and analysis of financial ratios in isolation from other information. The following factors must be considered while analysing the financial ratios:

- General economic condition of the firm
- Risk acceptance
- Future expectations
- Future opportunities
- Accounting system of the industry
- Analysing and interpretation system used by other firms in the industry.

The analysis and interpretation of financial ratios in the light of the above-listed factors can be useful but the analyst must still rely on skill, insight, and even

intention in order to interpret the ratios and arrive at a decision. The interpretation of the ratios can be made by comparing them with:

- *Previous figures* – trend analysis;
- *Similar firms* – inter-firm comparisons;
- *Targets* – individual ratio set to meet the objective.
- ***Trend Analysis*** The analyst usually use historical standards for evaluating the performance of the firm. The historical standards represent the financial ratios computed over a period of time which sets the trend. Trend analysis provides enough clues to the analyst for proper evaluation of the financial ratios. However, the changes in firm's policies over the period must be considered while interpreting ratios from comparison over time. Further, the average of the ratios for several years can also be used for this purpose.
- ***Inter-firm Comparisons*** Inter-firm comparisons may advocate the comparisons of similar ratios for a number of different firms in the same industry. Such an attempt would facilitate the comparative study of financial position and performance of the firms in the industry. The published ratios of trade associations or financial institutions can be of great help to the analyst in interpreting the financial ratios. However, the variations in accounting system and changes in the policies and procedures of the firm in comparison with the industry have to be taken care of while making use of inter-firm comparisons.
- ***Targets*** Under this method, the interpretation of the ratio is made by comparing it with the standard set for this purpose. Such a standard ratio, based upon well-proven conventions serves as a measuring scale for the evaluation of the ratios. The best example of such standard is the 1:1 ratio, which is to be considered as a good ratio for analysing the acid-test ratio.

Generally speaking, the use of single standard ratio for the interpretation of ratios is not much useful. The accounting experts usually recommend the use of groups of standard ratios for the evaluation of financial ratios.

5.2.1 Objectives

The objectives of ratio analysis can be segregated based on its usefulness to the management, creditors, employees, investors and government. Let's have a look at the objectives briefly from each of these perspectives.

Management

- Judging the performance and bringing in improvements for management functions
- Recognizing strengths and weakness of functions
- Identification of variances and deviations from the standards

- Periodic ratio analyses help the firm interpret their performance in a more nuance way

Creditors

NOTES

- Ensuring the payback of credit on specified time
- Judging whether to extend or hold credit based on the solvency ratio

Employees

- Recognizing stability and security of employment through good ratios
- Ascertaining the financial position to judge whether payment of salaries and wages, increment, promotion and prerequisites will be on time.

Investors

- Judging the safety of investments
- Gauging whether further investments must be made
- Assessing the time period for the return of investments

Government

- Finding out the contribution of different sectors to the GDP
- Ascertaining the requirement and scale of subsidies as per the industry
- Preparing and updating industrial policies based on the performance of different industries
- Understanding the overall economic health of the country

5.2.2 Important Managerial uses of Ratio Analysis

Ratio analysis helps the management to identify specific areas that reflect improvement or deterioration, as well as detect the trouble spots that may prevent the attainment of objectives. The interested parties undertake frequent examination of different areas of business to evaluate the management's ability to maintain a satisfactory balance among them, and to appraise the efficiency and effectiveness with which the management directs the firm's operations. Thus, the purpose of ratio analysis is to help the reader of financial statements to understand the information shown by highlighting a number of key relationships. However, the following are the principal advantages claimed by ratio analysis:

- It guides management in formulating future financial planning and policies.
- It throws light on the efficiency of the business organization.
- It permits comparison of the firm's figures with data for similar firms, and possibly with industry-wise data. It also allows the data to be measured against yardsticks of performance or of sound financial condition.
- It ensures effective cost control.

- It provides greater clarity, perspective, or meaning to the data, and it brings out information not otherwise apparent.
- It measures profitability and solvency of a concern.
- It permits monetary figures of many digits to be condensed to two or three digits and therefore enhances managerial efficiency.
- It helps in investment decisions.

Check Your Progress

1. List the factors which must be considered while analysing the financial ratios.
2. Name the technique of interpretation of ratio in which historical standards are used for evaluating the performance of the firm.
3. What is the purpose of ratio analysis?

5.3 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. The factors which must be considered while analysing the financial ratios include general economic condition of the firm, risk acceptance, future expectations, future opportunities, accounting system of the industry and analysing and interpretations system used by other firms in the industry.
2. Trend analysis is the technique of interpretation of ratio in which historical standards are used for evaluating the performance of the firm.
3. The purpose of ratio analysis is to help the reader of financial statements to understand the information shown by highlighting a number of key relationships.

5.4 SUMMARY

- Ratio analysis is one of the popular tools of financial statement analysis.
- A ratio is defined as the indicated quotient of two mathematical expressions and therefore expresses the relationship between two or more things.
- Financial ratio expedites the analysis by reducing the large number of items involved to a relatively small set of readily comprehended and economically meaningful indicators.
- The trend analysis provides enough clues to the analyst for proper evaluation of the financial ratios.
- Inter-firm comparisons may claim the comparisons of similar ratios for a number of different firms in the same industry.

- Under the targets method, the interpretation of the ratio is made by comparing it with the standard set for this purpose.
- The objectives of ratio analysis can be segregated based on its usefulness to the management, creditors, employees, investors and government.
- Ratio analysis helps the management to identify specific areas that reflect improvement or deterioration, as well as detect the trouble spots that may prevent the attainment of objectives.

5.5 KEY WORDS

- **Ratio:** It is defined as the indicated quotient of two mathematical expressions and the relationship between two or more things.
- **Financial ratio:** It is defined as a relationship between two variables taken from financial statements of a concern.
- **Trend analysis:** Trend ratios deal with the relationship between items over a period of time.

5.6 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. What are financial ratios? What does it involve?
2. What are the factors which must be considered while analysing financial ratios?

Long-Answer Questions

1. Explain the process of interpretation of ratios.
2. Discuss the objectives of ratio analysis and its important managerial uses.

5.7 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice*, 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management,* 4th edition. New Delhi: Vikas Publishing House.

UNIT 6 TYPES OF RATIOS

NOTES

Structure

6.0 INTRODUCTION

You were introduced to the concept of ratio analysis in the previous unit. You learnt that ratio analysis is a very powerful and most commonly used tool of analysis and interpretation of financial statements. It concentrates on the inter-relationship among the figures appearing in the financial statements. Ratio analysis helps to analyse the past performance of a company and to make future projections. It allows various interested parties, like management, shareholders, potential investors, creditors, government and other analysts to make an evaluation of the various aspects of company's performance from their own point of view and interest. In this unit, you will learn about the computation of different types of ratios and the factors affecting them .

6.1 OBJECTIVES

After going through this unit, you will be able to:

- Discuss the classification of ratios
- Explain profitability ratios
- Calculate turnover ratios
- Examine liquidity ratios
- Explain proprietary and market earning ratios
- Discuss the factors affecting efficiency of ratios

6.2 CLASSIFICATION OF RATIOS

NOTES

Ratios have been classified by different experts differently based on their peculiar characteristics. Some authorities classify ratios on the basis of the financial statements or statements from which the financial figures are selected. Accordingly, the following classification of ratios can be formed:

- ***Profit and Loss Ratios*** These ratios indicate the relationship between two such variables which have been taken from the profit and loss account. Basically, there are two types of such ratios, viz., those showing the current year's figures as a percentage of last year, thus facilitating comparison of the changes in the various profit and loss items; and those expressing relationship among different items of the current year, for example, the percentage of distribution expenses to sales.
- ***Balance Sheet Ratios*** Top management will probably want to view the financial structure of the company in terms of basic ratios of asset or liability categories to total assets. This set of ratios attempts to express the relationship between two balance sheet items, e.g., the ratio of stock to debtors, or the ratio of owner's equity to total equity.
- ***Inter-statement Ratios/Mixed Ratios*** The components for computation of these ratios are drawn from both balance sheet and profit and loss account. These ratios deal with the relationship between operating and balance sheet items. The examples of such ratios are debtors' turnover ratio, fixed assets turnover ratio, working capital turnover ratio, and stock turnover ratio.

Some authorities classify the ratios on the basis of time to which the ratios computed belong. On this basis, the ratio can be divided into following two major groups:

- ***Structural Ratios*** Structural ratios exhibit the relation between two such items which relate to the same financial period. Thus, the above-mentioned classification of ratios, *i.e.*, profit and loss ratios, balance sheet ratios and mixed ratios are covered under structural ratios if the components for the computation of these ratios are drawn from the financial statement that relate to the same period.
- ***Trend Ratios*** These ratios deal with the relationship between items over a period of time. Trend ratios indicate the behaviour of ratios for the period under study and thus provide enough scope for the proper evaluation of the business.

Another classification of ratios as developed by financial experts is on the basis of significance of ratios. Some ratios are considered more important than others when ratios are evaluated in the light of the objectives of the business. Accordingly, the following two main groups of ratios are covered under this classification:

- ***Primary Ratios*** Every commercial concern considers profit as its prime objective, and therefore, any ratio that relates to such objective is treated

as a primary ratio. The ratios covered by this category are return on capital, gross margin to sales, etc.

- ***Secondary Ratios*** Ratios other than primary ratios are known as secondary ratios. Such ratios are treated as supporting ratios to the primary ratios because these ratios attempt to explain the primary ratios. Ratios such as turnover ratios, expenses ratios, earnings per share are considered as secondary ratios.

Ratios are also classified according to the financial characteristics they describe. Accordingly, the following classification of ratios is made:

- Liquidity Ratios;
- Leverage Ratios;
- Profitability Ratios; and
- Activity Ratios.

The classification on the basis of characteristics is simple to calculate and easy to understand as compared to other classifications discussed above. Therefore, this classification is always preferred by the financial analyst to evaluate the business performance. Accordingly, a detailed discussion follows on the classification of ratios based on their financial characteristics.

6.2.1 Profitability Ratios

Profit has always been considered as the main indicator of a successful business. However, the real test of success or failure of a business is to evaluate its profit-earning capacity in relation to capital employed. It is against this background that financial experts developed profitability ratios which are used to measure the ability of the firm to convert sales into profits and to earn profits on assets employed. These indicate degree of success in achieving profit levels. The following are important profitability ratios:

- ***Gross Profit Margin Ratio*** This ratio indicates the relationship between gross profit and sales. It reflects how well cost of goods sold, a major expense item, is being controlled. It shows the profit made on sales before taking account of overheads. Thus, the gross profit margin highlights the production efficiency of a concern. It is always preferred to express this ratio in terms of percentage. The gross profit margin is computed by deducting cost of goods sold from the amount of sales as shown below:

$$\text{Gross Profit Margin Ratio} = \frac{\text{Sales} - \text{Cost of Goods Sold}}{\text{Sales}} \times 100$$

$$= \frac{\text{Gross Operating Profit}}{\text{Sales}} \times 100$$

In interpreting the gross profit margin ratio, it is important to observe any trend, but in making comparisons between companies it is vital to appreciate that gross profit margins vary considerably from industry to industry.

NOTES

However, gross profit margin must be sufficient to meet administrative and distribution expenses, dividend and accumulation of reserves.

- ***Net Profit Margin Ratio*** It monitors the net profit made in relation to sales. This ratio, also known as net operating margin, is calculated by dividing the net profit after tax by the amount of sales. Thus, net profit margins ratio can be written as under:

$$\text{Net Profit Margin Ratio} = \frac{\text{Net Profit after Tax}}{\text{Sales}}$$

In interpreting the net profit margin ratio it is important to bear in mind that such ratios vary considerably from firm to firm. Firms engaged in retailing are likely to have quite rapid turnover and to operate on low margins allied to high volume, while those firms engaged in selling a few large items must make a high profit in relation to the sales value of each one.

The net profit margin ratio provides a relatively clear picture of how efficiently the firm maintains control over its total expenses. In addition, the analyst may wish to calculate the relationship between each expense item and sales to determine the extent to which specific expenses are under control or are tending to move out of control. For this purpose, expenses ratios are used. Expenses ratios monitor the various expenses incurred in relation to sales. A high expense ratio would indicate low profitability while a low ratio is an indication for higher profitability. This ratio can be worked out as under:

$$\text{Particular Expenses Ratio} = \frac{\text{Particular Expenses}}{\text{Sales}} \times 100$$

- ***Return on Assets/Capital Employed*** One of the most widely used ratios is the return on assets.

Since assets are used to generate income, the higher the income, the more productive assets were during the period. In computing the return on assets, the analyst must bear in mind that both borrowed as well as owned funds are used by the business for the acquisition of assets, therefore, the return on assets should be computed before accounting for the interest on borrowed capital. At the same time, income tax too is not considered while calculating this ratio because taxes are calculated on income after interest deductions. Consequently, earning (income) before interest and taxes is usually used to measure the return on assets. Thus,

$$\text{Return on Assets} = \frac{\text{Earnings before Interest and Taxes (EBIT)}}{\text{Average Assets *}} \times 100$$

In the computation of average assets, the fictious assets must be excluded

When details about interest and tax are not available from financial statements, the analyst may replace earnings before interest and tax by net income in the calculation of the return on total assets.

NOTES

- ***Return on Owners' Equity*** Though the ratio of net profit to sales is a very useful indicator of performance in comparison to the company's experience in prior periods or to the current experience of other companies, it does not give a direct answer to a vital question: is the business providing an adequate return on the owners' investment, taking into account the risk associated with the company's business and what could be the earnings of this investment in alternative ventures? To help answer this question, the ratio of return on owners' equity is needed. The profit earned by the owners of a business is called *return on owners' equity*. This ratio is considered as an effective indicator of a company's profitability because it reflects the management's success in efficient utilization of the owners' investment. The return on owners' equity is worked out with the help of the following formula:

$$\text{Return on Owners' Equity} = \frac{\text{Net Profit after Taxes}}{\text{Owner's Equity}} \times 100$$

- ***Return on Equity Capital*** Equity shareholders are more serious as compared to preference shareholders in the profitability of a company. It is perhaps so because equity shareholders assume the highest risk in the company. Preference shareholders are assured of the rate of dividend, and therefore, the profitability of the company has no meaning for them. On the other hand, the rate of dividend for equity shareholders largely depends on the availability of profits. With the result, return on equity capital is a useful indicator for equity shareholders to measure the performance of the company. Return on equity capital monitors the profit made by the company in relation to its equity capital. This ratio is worked out as under:

$$\text{Return on Equity Capital} = \frac{\text{Net Profits after Tax} - \text{Preference Dividend}}{\text{Equity Share Capital}} \times 100$$

Illustration 6.1: The following are the summarised profit and loss account of Sweety Ltd. for the year ended 31st March, 2011:

Profit and Loss Account

Particulars	₹	*Particulars*	₹
To Opening stock	2,20,000	By Sales	9,00,000
To Purchases	6,00,000	By Closing stock	3,00,000
To Wages	1,60,000		
To Gross profit c/d	2,20,000		
	12,00,000		12,00,000

Particulars	₹	*Particulars*	₹
To Administrative expenses	40,000	By Gross profit b/d	2,20,000
To Selling and distribution expenses	45,000	By Interest (from investment outside business)	40,000
To Non-operating expenses	40,000	By Profit on sale of investment	40,000
To Net profit	1,75,000		
	3,00,000		3,00,000

Assume the rate of tax as 40 per cent

You are required to calculate:

(i) Gross Profit Margin Ratio

NOTES

(ii) Net Profit Margin Ratio

(iii) Selling and Distribution Expenses Ratio.

Solution

$$\text{Gross Profit Margin Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

$$= \frac{₹\ 2,20,000}{₹\ 9,00,000} \times 100 = 24.4\%$$

$$\text{Net Profit Margin Ratio} = \frac{\text{Net Profit after Tax}}{\text{Sales}} \times 100$$

$$= \frac{1,05,000}{9,00,000} \times 100$$

$$= 11.66\%$$

$$\text{Selling and Distribution Expenses} = \frac{\text{Selling and Distribution Expenses}}{\text{Sales}} \times 100$$

$$= \frac{45,000}{9,00,000} \times 100$$

$$= 5 \text{ per cent}$$

Working Notes:

Calculation of profits after tax:

	₹
Profit as per P&L A/c	1,75,000
Less: Tax @ 40%	70,000
Profit after tax	1,05,000

Illustration 6.2: On the basis of information given in Illustration and the information given below, you are required to calculate the following ratios:

(i) Return on Assets

(ii) Return on Equity Capital

(iii) Return on Owner's Equity

Additional Information:

Capital:

5,000, 7% preference shares @ 100 each fully paid: 15,000 equity shares @ 100 each fully paid Assets:

1 - 4 - 2010	₹ 5,50,000
31 - 3 - 2011	₹ 7,00,000

Solution

$$\text{Return on Assets} = \frac{\text{Earnings before Interest and Taxes (EBIT)}}{\text{Average Assets}} \times 100$$

$$= \frac{₹\,1,75,000}{₹\,6,25,000} \times 100$$

$$= 28 \text{ per cent}$$

$$\text{Return on Owners Equity} = \frac{\text{Net Profit after Tax}}{\text{Owners' Equity}} \times 100$$

$$= \frac{₹\,1,05,000}{₹\,20,00,000} \times 100$$

$$= 5.25 \text{ per cent}$$

$$\text{Return on Equity Capital} = \frac{\text{Net Profit after Tax} - \text{Pref. Dividends}}{\text{Equity Share Capital}} \times 100$$

$$= \frac{₹\,1,05,000 - ₹\,35,000}{₹\,15,00,000} \times 100$$

$$= 4.67 \text{ per cent}$$

Working Notes:

Calculation of Preferential Dividend:

= 7/100 × 5,00,000 = ₹ 35,000

Calculation of Average Assets:

$$\frac{\text{Operating Balance} + \text{Closing Balance}}{2}$$

$$= \frac{₹\,5,50,000 + ₹\,7,00,000}{2}$$

$$= ₹\,6,25,000$$

6.2.2 Market Value Ratios or Market Earnings Ratios

These are ratios which reflect on the stock trends and the performance of the company.

Earning Per Share (EPS)

This ratio measures the earnings per equity share, *i.e.*, it measures the profitability of the firm on a per share basis. It is calculated as follows:

$$\text{Earning per share} = \frac{\text{Net profit after taxes} - \text{Preference dividend}}{\text{No. of equity shares}}$$

EPS is one of the most commonly quoted and widely publicized ratio. Accounting Standard (AS) 20 – Earning Per Share has been made mandatory in nature by the Institute of Chartered Accountant of India. Accordingly, each company should show earning per share in its Profit and Loss Account. EPS is commonly studied by potential investors for making investment decisions in share market.

NOTES

Price Earning Ratio (P/E Ratio) or Market Earnings Ratio

This ratio is the market price of shares, expressed as multiple of earning per share (EPS). Its formula is:

$$\text{P/E ratio} = \frac{\text{Market price per equity share}}{\text{Earning per share}}$$

This ratio guides investors to decide whether to buy shares of a company or not. For example if earning per share of a company is ₹9 and its market price is ₹63 per share, then its P/E ratio is 7 (*i.e.*, ₹63 ÷ 9). In other words, market price of every rupee of earning is seven times. Accordingly, an investor can decide whether to purchase share of a company with a P/E ratio of seven.

Dividend Payout Ratio (Or Payout Ratio)

It indicates the percentage of equity share earnings distributed as dividends to equity shareholders. Its formula is:

$$\text{Dividend Payout Ratio} = \frac{\text{Dividend per share}}{\text{Earning per share (EPS)}}$$

Dividend Yield Ratio

Dividend is declared by a company as a percentage of par value or paid-up value or a specific amount per equity share. Dividend yield ratio is:

$$\text{Dividend Yield Ratio} = \frac{\text{Dividend per equity share}}{\text{Market price per equity share}}$$

This ratio is important for those investors who make investment decisions for the purpose of earning a reasonable yield on the amount of investment.

6.2.3 Liquidity and Turnover Ratios

The liquidity ratios indicate the liquidity of a company. They, in fact, measure the ability of a company to meets its current liabilities as they fall due. If the company has insufficient current assets in relation to its current liabilities, it might be unable to meet its commitments, and be forced into liquidation. Thus, ratios comparing the relationship between various groups of current assets and current liabilities are computed to measure the liquidity position of the company. Such ratios help in ascertaining the effectiveness of the working capital management. To gain an insight, analysts also use the variables other than those covered by the term working capital. The following are the important liquidity ratios:

- ***Current Ratio*** This is a fundamental measure of a firm's financial position in the short run, namely, its ability to meet normal operating obligations during one financial year. The current ratio compares the total current assets with the total current liabilities to find out whether the net assets are sufficient to meet the short-term obligation of the business. It is computed by dividing

NOTES

current assets by current liabilities. Current assets include cash, stock, work-in-progress, marketable securities and accounts receivable. On the other hand, current liabilities include accounts payable, sundry creditors, accrued income taxes, proposed dividend, borrowings from financial institutions and outstanding expenses. Usually current ratio is used by trade creditors to estimate the company's ability to repay its credit. The current ratio is calculated as:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

A high current ratio indicates a large proportion of current assets are available to meet current liabilities. Usually the higher the ratio, the better is a company's current financial position and normally the better it can meet current obligations. But at the same time, a higher current ratio would also mean that the company may have an excessive investment in current assets that does not produce a significant return. On the other hand, a low current ratio would indicate that sufficient cash is not available to pay current liabilities. A frequently used guideline to evaluate the adequacy of the current ratio is 2:1 or 2. However, there seems to be very little justification for such a standard. For some businesses, this may be an adequate current ratio, for others it may be too high or too low. Therefore, the standard for this ratio will vary from industries to industries. In fact, many renewed companies have much lower current ratio, as low as 1:1. In evaluating the appropriateness of current ratios, much depends on the nature of the business, composition of a firm's current assets, and turnover of the firm's certain current assets.

- ***Acid-test Ratio*** It provides an even more critical look at the ability of the company to meet its day-to-day obligations. It signifies a very short-term liquidity of a business concern and is, therefore, also called '*liquid ratio*'. If it is desired to apply a still stiffer and rigorous test for evaluating a firm's financial position in the short period, the application of acid-test ratio is recommended. The acid-test ratio is computed by dividing current assets in liquid form by current liabilities. Thus, stocks and similar items are excluded from current assets, leaving items such as debtors, bills receivable, marketable securities, and cash, which are already in liquid form, or may easily be converted into cash by discounting or factoring. The acid-test ratio assumes that stock may not be realized immediately and, therefore, this item is excluded in the computation of this ratio. Some experts advocate that the bank overdraft should also be excluded from current liabilities while calculating acid-test ratio. The logic for the exclusion of bank overdraft is based on the fact that bank overdraft is generally a permanent way of financing. The acid-test ratio is expressed as follows:

$$\text{Acid} - \text{Test Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

NOTES

Too low a ratio suggests not only inability to meet current claims but also inability to take advantage of cash discounts and other rewards for prompt payment (such as lower interest rates on borrowings). Further, a company with a low quick ratio may be forced to obtain a short-term loan plus interest charges, or implement some other measures to obtain the required cash. On the other hand, an excessive amount of quick assets could indicate that these assets should be put to more productive or profitable use elsewhere in the enterprise. An acid-test ratio of 1:1 is usually considered ideal and satisfactory. However, this is a rule of thumb and should be applied with care. The advocacy of ratios depends on the industry in which the firm operates.

- ***Receivables Turnover*** Another measure of liquidity is receivable turnover, which indicates the number of times that the average outstanding net receivables is turned over or converted into cash through collections during each year. Receivables turnover is the amount of period required for one complete cycle: From the time receivables are recorded through collection to the time new receivables are recorded. The faster the cycle is completed, the more quickly receivables are converted into cash. When the customers' accounts are collected promptly with little loss or collection expense, the firm finds it easier to meet its obligations when they become due. On the other hand, a long credit period granted to creditors would adversely affect the firms' liquidity position. The receivables turnover is the ratio of sales to net accounts receivable. This ratio is expressed as under:

  Receivable include both debtors and bills receivable and average receivable is calculated as

  $$\text{Average Receivables} = \frac{\text{Receivables at the beginning} + \text{Receivables at the end}}{2}$$

  $$\text{Receivable Turnover} = \frac{\text{Net Sales}}{\text{Average Receivables}}$$

  Some experts believe that the use of beginning and ending balances of receivables to calculate averages fail to give accurate results because year-end balances may not represent account balances most of the time during the year due to seasonal variation in business volume. Therefore, it is advisable to use current year's monthly or quarterly data instead of beginning and ending balances for calculating average receivables.

  It is important to note that while calculating receivables turnover, only credit sales should be used. However, this information often is not available in the financial statements, and therefore, the net sales is used for the purpose.

  Sometimes the receivable turnover is expressed as the 'collection period', viz., how many days (on the average) it takes to collect each rupee due. For the period in question (week, month, quarter, year, etc.), the collection period is calculated as:

$$\text{Average daily sales} = \frac{\text{Total Credit Sales}}{\text{360 (or 365 days)}}$$

The collection period can also be calculated with the help of the following formula:

NOTES

$$\text{Days's sales in receivable} = \frac{\text{Total Credit Sales}}{\text{Receivable turnover (ratio)}}$$

Note: We use 360 (or 365) day representing a year in the calculation of average daily sales. Such days can be more or less in a financial year depending on number of sundays and holidays which have to be excluded.

$$\text{Day's sales in Receivable} = \frac{\text{Average Receivable}}{\text{Average Daily Sales (Credit)}}$$

A high ratio of receivables to sales suggests over-exposure to credit losses and excessive costs in terms of interest on the capital required to extend credit to customers. Whereas a low ratio suggests insufficient extension of credit and therefore, lost sales and lost profits.

- ***Inventory Turnover*** The liquidity of inventories is measured by the number of times per year that inventory is converted into cost of goods sold. Hence, it is a device to measure the efficiency of the inventory management. However, in its zeal to show a high ratio, inventories are not allowed to drop down below the danger level. This ratio is worked out as under:

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

Sometimes it is considered more helpful to express the relationship between inventory and cost of goods sold as the 'number of days' supply of inventory'; in other words, the number of days the inventory supply could last. For the period in question, the number of days' supply of inventory is calculated as:

$$\text{Average day's cost of goods sold} = \frac{\text{Cost of goods sold}}{\text{Number of days in period}}$$

$$\text{Day's supply of Inventory} = \frac{\text{Average Inventory}}{\text{Average day's cost of goods sold}}$$

The average day's supply of inventory can also be computed with the help of the following formula:

$$\text{Day's supply of Inventory} = \frac{\text{Number of days in period}}{\text{Inventory Turnover (Ratio)}}$$

Inventory turnover rates vary tremendously by the nature of the business. It is usually desirable to compare a firm's inventory turnover with the turnover

NOTES

experience by comparable companies. It is not unusual for retailers of perishable commodities to experience a higher inventory turnover than those retailers who deal in durable goods. At the other extreme, retailers of jewellery frequently reflect a low yearly inventory turnover. A high turnover compensates for a lower margin on each item, producing a normal profit for the business. On the other hand, a business that sells slow-moving goods must make up for the low turnover by a higher profit margin on each item sold. Of great importance, however, is the need to evaluate the trend in the firm under review. Whether the trend is desirable would require detailed investigation into such aspects as changes in manufacturing techniques, labour slow downs, or inventory stockpiling in anticipation of price increases.

Illustration 6.3: From the following Balance Sheet of Lily Ltd., you are required to calculate the liquidity ratios and give your comments:

Lily Ltd.

Balance Sheet

(*as on 31st Dec., 2012*)

Liabilities	₹	*Assets*	₹
Share Capital:			
60,000 shares @ ₹10 each	6,00,000	Machinery	2,40,000
6% Debentures	2,50,000	Building	2,50,000
Reserves	1,10,000	Furniture and fittings	1,10,000
Bills payable	60,000	Investment (share in XY Co. Ltd.)	1,00,000
Trade creditors	40,000	Inventories	1,20,000
Income tax payable	25,000	Bills receivable	45,000
Outstanding expenses	40,000	Trade debtors	60,000
Bank overdraft	30,000	Short-term investment	65,000
		Cash at bank	1,10,000
		Cash in hand	55,000
	11,55,000		11,55,000

Solution

1. $\text{Current Ratio} = \dfrac{\text{Current Assets}}{\text{Current Liabilities}}$

$$= \frac{1,20,000 + 45,000 + 60,000 + 65,000 + 1,10,000 + 55,000}{60,000 + 40,000 + 25,000 + 40,000 + 30,000}$$

$$= \frac{4,55,000}{1,95,000} = 2.33:1$$

2. $\text{Quick Ratio/Acid-Test Ratio} = \dfrac{\text{Current Assets} - \text{Stock}}{\text{Current Liabilities}} = \dfrac{4,55,000 - 1,20,000}{1,95,000}$

$$= \frac{3,35,000}{1,95,000} = 1.72:1$$

Using the traditional guidelines, one would conclude that Lily Ltd. has adequate liquidity. The value of the current ratio indicates that the company has current assets of ₹ 2.33 to pay a current liability of ₹1. At the same time, acid-test ratio of

the company indicates that for every current liability of ₹ 1 the company has the quick assets of ₹ 1.72. Depending upon the circumstances, this may be enough to assure the liquidity of the company.

Illustration 6.4: M/s Sunlight Ltd. submits the following information for the year ending 31st December 2012:

Sales during the year		
Cash	3,00,000	
Credit	1,60,000	₹ 4,60,000
Stock:		
Opening		₹ 40,000
Closing		₹ 60,000
Gross profit for the year		₹ 1,60,000
Trade debtors:		
1-1-2012		₹ 10,000
31-12-2012		₹ 14,000
Bills receivable:		
1-1-2012		₹ 9,000
31-12-2012		₹ 7,000

You are required to calculate Inventory Turnover and Receivable Turnover ratio from the above given information.

Solution

1. Inventory Turnover Ratio $= \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} = \frac{₹\,3,00,000}{₹\,50,000}$
   $= 6$ times

2. Receivable Turnover Ratio $= \frac{\text{Net Sales (Credit)}}{\text{Average Receivable}} = \frac{₹\,1,60,000}{₹\,20,000}$
   $= 8$ times

Workings:

1. Cost of goods sold = Sales – Gross Profit
   = ₹ 4,60,000 – ₹ 1,60,000
   = ₹ 3,00,000
2. Average Inventory $= \frac{₹\,40,000 + 60,000}{2}$
   = ₹ 50,000
3. Average Receivable* $= \frac{₹\,19,000 + 21,000}{2}$
   $= \frac{₹\,40,000}{1}$
   = ₹ 20,000

Turnover Ratios

Activity ratios measure the efficiency of a firm in utilizing the available resources. Such ratios reflect the success of a firm in utilizing its resources in business activities.

NOTES

Activity ratios are popularly known as *turnover ratios* because they highlight the ability of management to convert or turnover the assets of the firm into sales. These ratios make a comparative study of the level of sales and the investment in various assets accounts. A sharp rise in this ratio may indicate that the company is expanding too quickly and is allowing sales to increase more rapidly than the underlying asset-base, a situation often referred to as 'over trading'. Conversely, a reduction in the ratio can indicate a decline in efficiency or a fall in demand for a firm's products. The important activity ratios are mentioned below:

- Fixed assets turnover
- Total assets turnover
- Inventory turnover
- Average collection period

The last two ratios of the above-mentioned activity ratios have already been discussed under liquidity ratio in the earlier in this section of this unit.

- ***Fixed Assets Turnover*** The ratio measures the efficiency in the utilization of fixed assets. The ratio of sales to fixed assets measures the turnover of the plant and machinery and is expressed as under:

$$\text{Fixed Assets Turnover} = \frac{\text{Sales}}{\text{Net Fixed Assets}}$$

- ***Total Assets Turnover*** This ratio measures the overall performance and activity of the business organization. It is computed by dividing sales by total assets. The following formula is applied to compute this ratio:

$$\text{Total Assets Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$$

Illustration 6.5: Compute the Fixed Assets Turnover and Total Assets Turnover from the following particulars:

Sales		₹ 3,00,000
Sales Return		₹ 40,000
Assets:		
Fixed	2,00,000	
Curent	1,50,000	₹ 3,50,000

Solution

$$\text{Fixed Assets Turnover} = \frac{\text{Sales}}{\text{Fixed Assets}}$$

$$= \frac{₹\ 2,60,000}{₹\ 2,00,000}$$

$$= 1.3:1$$

$$\text{Total Assets Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$$

$$= \frac{₹\ 2,60,000}{₹\ 3,50,000}$$

$$= 0.74:1$$

6.2.4 Solvency ratios and Proprietary Ratios

NOTES

Leverage is a reflection of the use of borrowed funds by a company to increase the return on owner's equity. Leverage ratios measure the contribution of financing by owners compared with financing provided by the firm's creditors. As the liquidity test measures the ability of a firm to meet its current financial obligations, leverage ratios, which gauge a firm's solvency, attempt to monitor the ability of a firm to pay all of its debts—current as well as non-current, as they become due. The capital structure of almost every company consists of two major components, viz.,

- Equity capital—capital that belongs to owners-investors
- Debt capital—amount that belongs to creditors

The proportion of debt capital to the total capital of a firm is usually referred to as '*leverage*' or *trading on the equity*. The fundamental economic principle underlying leverage is that whenever funds are borrowed at a lower rate of interest than the borrower can earn on those funds, the rate of return of owner's equity is increased over what it otherwise would have been had the borrowed funds been provided by the owners (Hobbs and Moore, 1979). Borrowing too heavily, however, can invite financial difficulty primarily because interest payments and principal repayments are contractual obligations that must be honoured. The ability to obtain and to repay a long-term debt often depends on a firm's ability to obtain capital from shareholders. Therefore, the relationship between shareholders' equity and creditors' equity is evaluated. The leverage ratios commonly used are discussed below.

- ***Debt–Equity Ratio*** It develops the relationship between owned funds and the borrowed funds. This reflects the extent to which borrowed capital is used in place of equity capital. Business firms acquire assets both with owners' and creditors' funds. The larger the portion of funds provided by owners, the less risk is assumed by creditors. The debt-equity ratio is worked out as:

$$\text{Debt - Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Owners' Equity}}$$

  The ratio represents the proportion of external equity to internal equity in the capital structure of the firm. The external equity represents the amount of debts/liabilities to outsiders. It includes both short-term as well as long-term liabilities. On the other hand, owners equity includes all such liabilities that belong to the shareholders, e.g., share capital (both preferential as well as equity), reserves and surpluses. However, the accumulated losses and deferred expenses are to be deducted from the owner's equity in the calculation of debt–equity ratio.

  Either too high or too low a ratio may be disadvantageous. Too high suggests that management is not taking advantages of opportunities to maximize profits

NOTES

through borrowing. Too low suggests undue exposure to risks of bankruptcy and to a fixed burden of interest expenses in the event of a period of relatively low profit (when the rate of return on total capital is less than the interest rate on borrowed capital). As a rule of thumb, debt–equity ratio of less than 2:1 is taken as acceptable, but this is not based on any scientific analysis. However, many financial analysts prefer to consider 1:1 as safe. As the ratio increases, the amount of risk assumed by creditors increases, because the ratio indicates decreasing solvency. In fact, the acceptable level of ratio will vary from firm to firm. For example, banking institutions will have much higher debt–equity ratio as compared to manufacturing or trading concerns.

- ***Equity Ratio/Proprietary Ratio*** A variant to the debt–equity ratio is the proprietary ratio which indicates the relationship between owner's equity and total assets. It measures the proportion of a company's assets that are provided or claimed by the owners. The ratio of owners' equity to total assets is a measure of the financial strength or weakness of the enterprise. Recall that the owners' equity is the residual interest in a firm's assets after allowance has been made for the claims of creditors against the assets. If the owners' equity is a small proportion of the total assets, the enterprise may be considered financially weak, because the owners have a relatively small investment in the firm as compared to the creditors. On the other hand, a low proprietary ratio would indicate a relatively larger degree of security for the company. This ratio is worked out as follows:

$$\text{Equity Ratio} = \frac{\text{Owners' Equity}}{\text{Total Assets}}$$

The components of the proprietary ratio are owners' equity and total assets. The owners' equity includes share capital both preferential and equity, undistributed profits, reserves and surplus. The amount of owners' equity must be deducted by the amount of accumulated loss, if any. On the other hand, the total assets represent the total resources of the company. However, some experts are of the opinion that the total assets of a company for the purpose of proprietary ratio should include only tangible assets. Consequently, the amount of goodwill shall be excluded from the total assets in the computation of owners' equity to total assets.

- ***Ratio of External Equities to Total Assets (Solvency Ratio)*** This is a variant of the proprietary ratio. This ratio measures the proportion of a firm's assets that are financed by creditors. To the creditor, a low ratio would ensure greater security for extending credit to the firm. However, a too low ratio suggests that management is not using its credit most advantageously. This ratio is expressed as under:

$$\text{Solvency Ratio} = \frac{\text{External Equity}}{\text{Total Assests}}$$

The term external equities represent all debts, both long-term as well as short-term. On the other hand, total assets refer to total resources of the concern.

NOTES

- ***Fixed Assets to Net Worth Ratio (Ratio of Fixed Assets to Proprietor's Funds)***

  This ratio indicates the percentage contributed by owners to the value of fixed assets. It can be worked out as follows:

$$\text{Fixed Assests to Net Worth} = \frac{\text{Fixed Assets}}{\text{Net Worth}}$$

  Fixed assets represent cost of acquisition of the fixed assets deducted by the amount of depreciation thereon up to the period. The net worth represents the amount due to the shareholders, *i.e.*, share capital, reserves and surpluses. Financial experts are of the opinion that in manufacturing concerns, investment in plants should be made out of equity rather than borrowed capital, therefore, a ratio of at least 1:1 is considered desirable. On the other hand, a lower ratio suggests an undue burden of debt on the enterprise that tends to increase the internal rate at which an enterprise can borrow.

- ***Current Assets to Net Worth Ratio*** This ratio signifies the relationship between the current assets and net worth. In other words, it is a correlation between current assets and net worth. We can put this as under:

$$\text{Current Assets to Net Worth Ratio} = \frac{\text{Current Assets}}{\text{Net Worth}}$$

  This ratio indicates the extent to which shareholders' funds have gone into the financing of the current assets. It is advisable to study the ratio of current assets to net worth with the ratio of fixed assets to net worth.

- ***Interest Coverage Ratio*** A company is considered solvent if its revenue is more than its interest and other expenses. Consequently, the company that has revenue sufficient to meet only the expenses and leaving nothing as net income is considered less solvent. Against this background, one of the approaches to test solvency of the enterprise is interest coverage ratio. This ratio measures how many times a company could pay its interest expenses. This ratio is calculated by dividing interest expenses into earnings available for payment of interest expense. We can put this as under:

$$\text{Interest Coverage Ratio} = \frac{\text{Net Profit before Interest and Tax}}{\text{Fixed Interest Charges}}$$

  Interest coverage ratio measures the ability of a firm to protect the interests of long-term creditors. It is often stated that in order to ensure adequate protection to long-term creditors, this ratio should be 2 or more.

NOTES

Illustration 6.6: From the following balance sheet you are required to calculate leverage ratios:

Balance Sheet

Liabilities	₹	*Assets*	(₹)
3,000 Equity shares @ ₹ 100 each	3,00,000	Building	2,50,000
7% Debentures	1,50,000	Furniture	40,000
Reserves and Surplus	80,000	Machinery	2,10,000
Sundry creditors	30,000	Stock	60,000
Bills payable	50,000	Debtors	30,000
		Cash balances	20,000
	6,10,000		6,10,000

Solution

$$\text{Debt-Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Owner's Equity}} = \frac{₹\ 2,30,000}{₹\ 3,80,000}$$

$$= 0.61 \text{ (approx.)}$$

$$\text{Equity Ratio} = \frac{\text{Owner's Equity}}{\text{Total Assets}} = \frac{₹\ 3,80,000}{₹\ 6,10,000}$$

$$= 0.62 \text{ (approx.)}$$

$$\text{External Equitites to Total Assets Ratio} = \frac{\text{External Equity}}{\text{Total Assets}}$$

$$= \frac{₹\ 2,30,000}{₹\ 6,10,000}$$

$$= 0.38 \text{ (approx.)}$$

$$\text{Fixed Assets to Net Worth Ratio} = \frac{\text{Fixed Assets}}{\text{Net Worth}}$$

$$= \frac{₹\ 5,00,000}{₹\ 3,80,000} = 1.32 \text{ (approx.)}$$

$$\text{Current Assets to Net Worth Ratio} = \frac{\text{Current Assets}}{\text{Net Worth}}$$

$$= \frac{₹\ 1,10,000}{₹\ 3,80,000}$$

$$= 0.29 \text{ (approx.)}$$

6.3 FACTORS AFFECTING EFFICIENCY OF RATIOS

Ratio analysis is not the best bet when it comes to serving as a tool for financial statement analysis, there are many factors which affects its efficiency. The following are some of them:

- It does not take into account the inflationary changes and relies on real prices. This means that the changes in the inventory and depreciation values will result in different interpretations.

NOTES

- It may show different results in case the accounting policies, and operational structure changes. This includes changes in terms of financial metrics which heavily affects the manner of computation. In case this is not similar across different periods and different companies, the ratio will be incomparable.
- It may suffer from problems of misrepresentation of data in case the company attempts window dressing, or the purpose of analysis is murky.
- It is problematic in the sense that it does not take into consideration the seasonal factors like holiday season, weather conditions and geographical locations the different businesses are set in affecting their accounts.

Check Your Progress

1. What are structural ratios?
2. List some of examples of secondary ratios.
3. How is acid-test ratio calculated?
4. What does interest coverage ratio measure?
5. Which type of earnings are used to measure the return on assets?

6.4 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. Structural ratios exhibit the relation between two such items which relate to the same financial period.
2. Ratios such as turnover ratios, expenses ratios, earnings per share are considered as secondary ratios.
3. Acid-test ratio is calculated by dividing current assets in liquid form by current liabilities.
4. Interest coverage ratio measures the ability of a firm to protect the interests of long-term creditors.
5. Earnings (income) before interest and taxes are usually used to measure the return on assets.

6.5 SUMMARY

- Profit and loss ratios indicate the relationship between two such variables which have been taken from the profit and loss account.
- Balance sheet ratios attempts to express the relationship between two balance sheet items e.g., the ratio of stock to debtors, or the ratio of owner's equity to total equity.

NOTES

- Inter-statement ratios deal with the relationship between operating and balance sheet items.
- Structural ratios exhibit the relation between two such items which relate to the same financial period.
- Trend ratios deal with the relationship between items over a period of time.
- Primary ratios refer to any ratio that relates to such objective is treated as primary ratio.
- Secondary ratios represent such ratios other than the primary ratio.
- The liquidity ratios indicate the liquidity position of a company.
- The current ratio compares the total current assets with the total current liabilities.
- Acid-test ratio provides an even more critical look at the ability of the company to meet its day-to-day obligations.
- Receivables turnover is the amount of period required for one complete cycle: From the time receivables are recorded through collection to the time new receivables are recorded.
- Leverage ratios measure the contribution of financing by owners compared with financing provided by the firm's creditors.
- Debt-equity ratio develops relationship between owned funds and the borrowed funds.
- Equity Ratio/Proprietary Ratio measures the proportion of the company's assets that are provided or claimed by the owners.
- Ratio of external equities to total assets ratio measures the proportion of the firm's assets that are financed by creditors.
- Fixed assets to net worth ratio indicates the percentage contributed by owners to the value of the fixed assets.
- The ratio of current assets to net worth signifies the relationship between the current assets and net worth.
- Interest coverage ratio measures how many times a company could pay its interest expenses which is calculated by dividing interest expenses into earnings available for payment of interest expense.
- Profitability ratios are used to measure the ability of the firm to convert sales into profits and to earn profits on assets employed.
- Gross profit margin ratio indicates the relationship between gross profit and sales.
- The net profit margin ratio monitors the net profit made in relation to sales.
- Return on Assets/ Capital Employed measures relationship earning before interest and taxes and a firm's average assets.

NOTES

- Return on owner's equity ratio is considered an effective indicator of the company's profitability because it reflects the success of management in the efficient utilization of the owner's investment.
- Return on equity capital monitors the profit made by the company in relation to its equity capital.
- The earnings per share represent average amount of net income earned by single equity share.
- Activity ratios measure the efficiency of a firm in employing the available resources.
- Fixed assets turnover ratio measures the efficiency in the utilization of fixed assets.
- Total Assets turnover ratio measures the overall performance and activity of the business organization.

6.6 KEY WORDS

- **Liquidity ratios:** It refers to the ratios comparing the relationship between various groups of current assets and current liabilities to measure the liquidity position of the company.
- **Solvency ratios:** It refers to the ratios which measure the contribution of financing by owners compared with financing provided by the firm's creditors.
- **Profitability ratios:** It refers to the ratios which measure the profit-earning capacity of a firm in relation to the capital employed.
- **Activity ratios:** It refers to the ratios which measure the efficiency of a firm in utilizing the available resources.

6.7 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. State the significance of each of the following ratios and turnovers and tell how each is calculated:
   (i) Current Ratio
   (ii) Receivable Turnover
   (iii) Solvency Ratio
   (iv) Inventory Turnover
   (v) Return on Assets
2. 'The return on Capital Employed is often taken as measure of efficiency of an organization'. Comment.

NOTES

3. What do you understand by Liquidity Ratio, Leverage Ratio, Profitability Ratio and Activity Ratio?
4. A company has a 2 to 1 current ratio. List several reasons why this ratio may not be adequate.
5. What are the factors affecting the efficiency of ratios?

Long-Answer Questions

1. Explain the classification of ratios.
2. Discuss the usefulness of the following ratios:
   (a) Acid-Test Ratio
   (b) Debt-Equity Ratio
   (c) Net Worth to Fixed Assets
   (d) Inventory Turnover.
3. The following is the balance sheet of SHE Ltd. as on 31st December, 2012:

	₹
Liabilities	
Share capital	2,00,000
General reserve	50,000
Profit and loss	30,500
Bank loan	70,000
Sundry creditors	1,50,000
Provision for tax	30,000
	5,30,500
Assets	
Buildings	2,00,000
Machinery	1,50,000
Inventory	1,00,000
Sundry debtors	60,000
Cash in hand	20,500
	5,30,500

   You are required to comment on the liquidity position of the concern.

4. Following accounting information is obtained relating to a limited company:

	₹
Sales	45,00,000
Cost of goods sold	25,00,000
	20,00,000
Administrative expenses	7,00,000
	13,00,000
Taxes	8,00,000
Net profit	5,00,000

Balance Sheet

Liabilities	₹	*Assets*	₹
7% Pref. share capital	30,00,000	Building	30,00,000
Equity share capital	15,00,000	Machinery	25,00,000
Reserves	5,00,000	Debtors	3,00,000
6% Debentures	8,00,000	Stock	3,00,000
Current liabilities	6,00,000	Goodwill	1,00,000
		Cash	2,00,000
	64,00,000		64,00,000

NOTES

Opening stock was ₹ 3,00,000. Assume 360 days in a year. Compute the following ratios:

(i) Current ratio

(ii) Debtors ratio

(iii) Gross profit ratio

(iv) Net profit ratio.

5. The following information is given:

Current ratio = 2.8

Acid-test ratio = 1.5

Net current assets = 1,62,000

Find out:

(a) Current assets

(b) Current liabilities

(c) Liquid assets.

6. (a) Find out current liabilities when current assets are ₹ 6,00,000, current ratio 2.5:1

(b) Find out quick ratio when:

Current assets = ₹ 2,40,000

Current liabilities = ₹ 1,60,000

Stock = ₹ 80,000

6.8 FURTHER READINGS

NOTES

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice*, 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management*, 4th edition. New Delhi: Vikas Publishing House.

UNIT 7 USES OF RATIO ANALYSIS

NOTES

Structure

7.0 INTRODUCTION

As you have already learnt in the previous units, ratio analysis is of critical analysis when it comes to understanding the profitability, liquidity, solvency and operational efficiency of the companies. This analysis is based on the ratios of the items in the financial statements itself and therefore, it is critical to note that based on the information of these ratios, items of the financial statements can be computed and thereby financial statements like profit and loss as well as balance sheet be prepared. In this unit, you will see some practical problems which will reflect this computation. But ratios cannot be relied upon entirely, there are some factors which affect its efficiency as you have learnt in the previous unit. In this unit, you will also discuss the major limitations which comes with the use of such ratios.

7.1 OBJECTIVES

After going through this unit, you will be able to:

- Discuss the uses and limitations of ratio analysis
- Explain the construction of profit and loss account and balance sheet with ratios and relevant figures
- Practice some of the ratio analysis problems

7.2 USES AND LIMITATIONS

You have already learnt about the uses of ratio analysis in Unit 5, let's briefly recapitulate the advantages of ratio analysis here:

NOTES

Advantages of Ratio Analysis

As stated earlier, ratio analysis is one of the most important tools of financial analysis. Financial health of a business can be diagnosed by this tool. Such an analysis offers the following advantages:

1. **Useful in analysis of financial statements:** Ratio analysis is the most important tool available for analysing the financial statements, *i.e.*, Profit and Loss Account and Balance Sheet. Such analysis is made not only by the management but also by outside parties like bankers, creditors and investors.
2. **Useful in improving future performance:** Ratio analysis indicates the weak spots of the business. This helps management in overcoming such weaknesses and improving the overall performance of the business in future.
3. **Useful in inter-firm comparison:** Comparison of the performance of one firm with another can be made only when absolute data is converted into comparable ratios. If *A* firm is earning a net profit of ₹50,000 while another firm *B* is earning ₹1,00,000, it does not necessarily mean that firm *B* is better off unless this profit figure is converted into a ratio and then compared.
4. **Useful in judging the efficiency of a business:** As stated earlier, accounting ratios help in judging the efficiency of a business. Liquidity, solvency and profitability of a business can be easily evaluated with the help of various accounting ratios, like current ratio, liquid ratio, debt–equity ratio and net profit ratio. Such an evaluation enables the management to judge the operating efficiency of the various aspects of the business.
5. **Useful in simplifying accounting figures:** Complex account- ing data presented in Profit and Loss Account and Balance Sheet is simplified, summarized and systematized with the help of ratio analysis, so as to make it easily understandable. For example, gross profit ratio, net profit ratio, operating ratio, etc., give a more easily understandable picture of the profitability of a business than the absolute profit figures.

Limitations of Ratio Analysis

Ratio analysis is a very useful technique. But one should be aware of its limitations as well. The following limitations should be kept in mind while making use of ratio analysis in interpreting the financial statements:

1. **Reliability of ratios depends upon the correctness of the basic data:** Ratios obviously will be only as reliable as the basic data on which they are based. If the Balance Sheet or Profit and Loss Account figures are themselves unreliable, it will be a mistake to put any reliance on the ratios worked out on the basis of that Balance Sheet or Profit and Loss Account.
2. **An individual ratio may by itself be meaningless:** Except in a few cases, an accounting ratio may by itself be meaningless and acquires

significance only when compared with relevant ratios of other firms or of the previous years. In fact, ratios yield their best advantage on comparison with other similar firms; also if ratios for a year are compared with ratios in the previous years, it will be a useful exercise. Comparison is the essential requirement for using ratios for interpreting a given situation in a firm or industry.

3. **Ratios are not always comparable:** When the ratios of two firms are being compared, it should be remembered that different firms may follow different accounting practices. For example, one firm may charge depreciation on straight line basis and the other on diminishing value. Similarly, different firms may adopt different methods of stock valuation. Such differences will not make some of the accounting ratios strictly comparable. However, use of accounting standards makes these ratios comparable.
4. **Ratios sometimes give a misleading picture:** One company produces 500 units in one year and 1,000 units the next year; the progress is 100%. Another firm produces 4,000 units in one year and 5,000 in the next year, the progress is 25%. The second firm will appear to be less active than the first firm, if only the rate of increase or ratio is compared. It will be much more useful if absolute figures are also compared along with rate of increase—unless the firms being compared are equal in all respects. In fact, one should be extremely careful while comparing the results of one firm with those of another firm if the two figures differ in any significant manner, say in size, location, degree of automation or mechanization.
5. **Ratios ignore qualitative factors:** Ratios are as a matter of fact, tools of quantitative analysis. It ignores qualitative factors which sometimes are equally or rather more important than the quantitative factors. As a result of this, conclusions from ratio analysis may be distorted. For example, despite the fact that credit may be granted to a customer on the basis of information regarding the financial position of business as disclosed by certain ratios, but the grant of credit ultimately depends upon the credit standing, reputation and managerial ability of the customer, which cannot be expressed in the form of ratios.
6. **Change in price levels makes ratio analysis ineffective:** Changes in price levels often make comparison of figures for a number of years difficult. For example, the ratio of sales to fixed assets in 2018 would be much higher than in 2005 due to rising prices because fixed assets are still being expressed on the basis of cost incurred a number of years ago while sales are being expressed at their current prices.
7. **There is no single standard for comparison**: Ratios of a company have meaning only when they are compared with some standard ratios. Circumstances differ from firm to firm and the nature of each industry is different. Therefore, the standards will differ for each industry and the

NOTES

circumstances of each firm will have to be kept in mind. It is difficult to find out a proper basis of comparison. Therefore, the performance of one industry may not be properly comparable with that of another. Usually it is recommended that ratios should be compared with the average of the industry. But the industry averages are not easily available.

8. **Ratios based on past financial statements are no indicators of future:** Accounting ratios are calculated on the basis of financial statements of past years. Ratios thus indicate what has happened in the past. Since past is quite different from what is likely to happen in future, it is difficult to use ratios for forecasting purposes. The financial analyst is more interested in what will happen in future. The management of a company has information about the company's future plans and policies and is, therefore, able to predict future to a certain extent. But an outsider analyst has to rely only on the past ratios which may not necessarily reflect the firm's future financial position and performance.

Conclusion: On the basis of advantages and limitations of ratio analysis discussed above, it may be concluded that ratios are extremely useful if used with caution. Ratio analysis should not be performed mechanically. This may prove not only misleading but also dangerous. Limitations of ratio analysis should always be kept in mind as precautions while drawing any conclusions from the ratios.

7.3 CONSTRUCTION OF PROFIT AND LOSS ACCOUNT AND BALANCE SHEET WITH RATIOS AND RELEVANT FIGURES

It is possible to use to ratios or financial ratios and other relevant figures to construct important financial statements such as the Profit and Loss Account and Balance Sheet. The numerical ratios or figures provided are used as a starting point for deriving missing figures through interpolation. This can be better explained with the help of examples.

Illustration 7.1: Following information is given to you:

	₹
1. Current liabilities	1,00,000
2. Reserves and surplus	50,000
3. Bills payable	40,000
4. Debtors	35,000
5. Current ratio	1.75
6. Acid-test ratio	1.15
7. Fixed assets to proprietor's funds	.75

The current assets of the firm consist of debtors, stock and cash. The firm does not have any long-term liability. You are required to prepare a balance sheet.

NOTES

Solution

Balance Sheet

Liabilities	₹	*Assets*	₹
Capital	2,50,000	Fixed assets	2,25,000
Reserves and surplus	50,000	Stock	60,000
Bills payable	40,000	Debtors	35,000
Sundry creditors	60,000	Cash	80,000
	4,00,000		4,00,000

Working Notes:

I. Calculation of Current Assets:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$1.75 = \frac{\text{Current Assets}}{₹\ 1{,}00{,}000}$$

$$\text{Current Assets} = ₹\ 1{,}00{,}000 \times 1.75$$
$$= ₹\ 1{,}75{,}000$$

II. $$\text{Acid-test Ratio} = \frac{\text{Liquid Assets}}{\text{Current Liabilities}}$$

$$\therefore \quad 1.15 = \frac{\text{Liquid Assets}}{₹\ 1{,}00{,}000}$$

$$\text{Liquid Assets} = ₹\ 1{,}00{,}000 \times 1.15 = ₹\ 1{,}15{,}000$$

Calculation Stock:

$$\text{Stock} = \text{Current Assets} - \text{Liquidity Asset*}$$
$$= ₹\ 1{,}75{,}000 - ₹\ 1{,}15{,}000$$
$$= ₹\ 60{,}000$$

III. Calculation of Cash Balances:

$$\text{Cash} = \text{Liquid Assets} - \text{Debtors}$$
$$= ₹\ 1{,}15{,}000 - ₹\ 35{,}000$$
$$= ₹\ 80{,}000$$

IV. Calculation of Fixed Assets:

Since the firm does not have any long-term liability therefore, shareholder's equity should be equal to total net assets. If the fixed assets are 0.75 to proprietor's funds, net current assets should be 0.25 of the total net assets. Thus, fixed assets shall be:

$$\text{Net Current Assets} = \text{Current Assets} - \text{Current Liabilities}$$
$$= ₹\ 1{,}75{,}000 - ₹\ 1{,}00{,}000 - ₹\ 75{,}000$$

$$\frac{0.75}{0.25} \times \text{Net Current Assets} = \frac{0.75}{0.25} \times 75{,}000\ {**} = ₹\ 2{,}25{,}000$$

V. Calculation of Shareholder's Funds:

NOTES

If fixed assets are 0.75, shareholder's funds should be 1.00. Therefore, when fixed assets are equal to ₹ 2,25,00 then shareholder's funds will be :

$$\frac{100}{75} \times 2{,}25{,}000 = ₹\ 3{,}00{,}000$$

VI. Calculation of Share Capital:

Shareholders funds	=	3,00,000
Less: Reserves and Surplus	=	50,000
Share Capital	=	2,50,000

VII. Calculation of Sundry Creditors:

		₹
Current Liabilities	=	1,00,000
Less: Bills Payable	=	40,000
Sundry Creditors	=	60,000

Illustration 7.2: From the below given particulars, prepare the Balance Sheet of Electro Ltd. on 31st March 2011.

	₹
Annual sales	1,40,000
Sales to net worth	4 times
Current liabilities to net worth	50%
Total debt to net worth	80%
Current ratio	2.2 times
Sales to inventory	8 times
Average collection period	40 days
Fixed assets to net worth	70%

Assume that all sales are made on credit.

Solution

Balance Sheet of Electro Limited

Liabilities	₹	*Assets*	₹
Net worth	16,00,000	Fixed assets	11,20,000
Long-term debt	4,80,000	Stock	50,000
Current debt	8,00,000	Debtors	44,444
		Cash	16,65,556
	28,80,000		28,80,000

NOTES

Working Notes:

1. Net Worth:

   Sales to net worth = 4 times

   ₹ 4,00,000 × 4 = ₹ 16,00,000

2. Current Liability:

   Current Liability to net worth 50%

   ₹ 16,00,000 × 50/100 = ₹ 8,00,000

3. Total Liability:

   Total debt to net worth 80%

   ₹ 16,00,000 × 80/100 = ₹ 12,80,000

4. Long-term Liabilities:

   = Total Liabilities – Current Liabilities

   = ₹ 12,80,000 – ₹ 8,00,000

   = ₹ 4,80,000

5. Current Assets:

   $$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

   $$2.2 = \frac{\text{Current Assests}}{₹\ 8,00,000}$$

   Current Assets = ₹ 8,00,000 × 2.2

   = ₹ 17,60,000

6. Inventory:

   Sales to Inventory = 8 times

   $$= \frac{40,000}{8} = ₹\ 50,000$$

7. Debtors:

   Average collection period = 40 days

   $$= \frac{4,00,000 \times 40}{360}$$

   = ₹ 44.444

8. Cash:

		₹
Current assets		17,60,000
Less: Stock	₹ 50,000	
Debtors	₹ 44,444	94,444
		16,65,556

9. Fixed Assets:

   Fixed assets to net worth 70%

   $$= \frac{₹\ 16,00,000 \times 70}{100} = ₹\ 11,20,000$$

Illustration 7.3: From the following information you are required to prepare a balance sheet:

1. Current ratio	1.75
2. Liquid ratio	1.25

NOTES

3.	Stock turnover ratio (Cost of sales/Closing stock)	9
4.	Gross profit ratio	25 per cent
5.	Debt collection period	1½ months
6.	Reserves and surplus to capital	0.2
7.	Turnover to fixed assets	1.2
8.	Capital gearing ratio	0.6
9.	Fixed assets to net worth	1.25
10.	Sales for the year	₹ 12,00,000

Solution

Balance Sheet

Liabilities	₹	*Assets*	₹
Share capital	5,00,000	Fixed assets	7,50,000
Reserves and surplus	1,00,000	Stock	1,00,000
Long-term liabilities	3,00,000	Debtors	1,50,000
Current liabilities	2,00,000	Cash	1,00,000
	11,00,000		11,00,000

Working Notes:

1. Calculation of Cost of sales:

   Cost of Sales = Sales – Gross Profit = 12,00,000 – (25 ÷ 100 × 12,00,000)

   = 12,00,000 – 3,00,000 = ₹ 9,00,000

2. Calculation of Closing stock:

   $$\text{Closing Stock} = \frac{\text{Cost of Sales}}{\text{Stock Turnover Ratio}} = \frac{9,00,000}{9} = ₹\ 1,00,000$$

3. Calculation of Debtors:

   Debtors = Total Sales × Debt Collection Period = 12,00,000 × $\frac{15}{12}$ = ₹ 1,50,000

4. Calculation of Current asset:

   $$\text{Current Asset} = \frac{\text{Current Ratio}}{\text{Stock Ratio}} \times \text{Stock}$$

   $$= \frac{1.75}{0.5\,*} \times 1,00,000 = ₹\ 3,50,000$$

5. Calculation of Liquid assets:

   Liquid Assets = Current Assets – Stock = ₹ 3,50,000 – ₹ 1,00,000

   = ₹ 2,50,000

6. Calculation of Cash:

   Cash = Liquid Assets – Debtors = ₹ 2,50,000 – ₹ 1,50,000

NOTES

= ₹ 1,00,000

7. Calculation of Fixed assets:

$$\text{Fixed Asset} = \frac{\text{Cost of Sales}}{\text{Fixed Asset Turnover}} = \frac{9,00,000}{1.2}$$

$$= ₹\ 7,50,000$$

8. Calculation of Current liabilities:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

or

$$\text{Current Liabilities} = \frac{\text{Current Assets}}{\text{Current Ratio}}$$

$$= \frac{₹\ 3,50,000}{1.75} = ₹2,00,000$$

9. Calculation of Share capital:

   Share Capital = Net Worth – Reserves and Surplus

   = 6,00,000 – 1,00,000

   = ₹ 5,00,000

10. Calculation of Long-term liabilities:

    Long-term liabilities = Share Capital × Gearing Ratio = 5,00,000 × 0.6

    = ₹ 3,00,000

Illustration 7.4: Ashwin Ltd. commenced manufacture of Scooters on 1.4.15 with a paid-up capital of ₹ 100 lakh. The company had obtained a licence to manufacture 2000 vehicles per annum. For the year ended 31.3.16 the company produced 1,500 vehicles and sold 1,250 vehicles at a price of ₹ 24,000 per vehicle. The operating statements of the company revealed the following information and ratios:

Information

(a) Capital	:	The company raised an additional capital of ₹ 50 lakh on 1.2.16.
(b) Dividend	:	The company paid an interim dividend at 10% on 31.10.15. A further dividend of 10% was provided out of the profits on 31.3.16. No dividend was payable on the additional capital raised.
(c) Loan	:	A long-term loan of ₹100 lakh at 20% rate of interest was obtained on 1.4.15. This loan is to be paid in five annual equal instalments. The company paid the interest as well as the first instalment of ₹ 20 lakh on 31.3.16.

NOTES

(d) Cash Balance : The cash on hand and at bank on 31.3.16 was ₹ 6 lakh.

(e) Investment : The company invested a sum of ₹ 100 lakh in Govt. Bonds on 1.6.15, carrying an interest of 12%. The interest was received at the end of every month. All moneys were duly received.

(f) Cost of Production : Cost of production consisted of Raw materials, Direct labour, Manufacturing overheads and Depreciation. Direct labour was 35% of the production cost.

(g) Total Assets : The total assets (Net fixed assets, Investment and Current assets) of the company as on 31.3.16 equalled the Sales Turnover of the year.

(h) Finished Goods : The finished goods were valued on the basis of the full production cost.

Ratios :	Current ratio	2
	Debtors' turnover	6 times
	Creditors' turnover	6 times
	Interest coverage at	4 times
	Debt service coverage ratio	1.75 times
	Profit after tax	10% of sales turnover
	Raw materials turnover (based on closing stock)	4 times

You are required to:

Prepare the Profit & Loss A/c for the year ended 31.3.16 and the Balance Sheet as on that date.

Notes: (1) Indicate your figures in lakh.

(2) All working notes must form part of your answer:

Solution

Ashwin Limited
Profit and Loss Account
for the year ended 31st March, 2016

Particulars				(₹ *in lakh*)
Sales				300
Less:	Cost of goods sold			
	Raw material consumed:			
	Purchases	120		
Less:	Closing stock	24	96	
	Direct labour		84	

NOTES

	Manufacturing overheads:	40	
	Depreciation	20	
	Cost of production	240	
Less:	Closing stock of finished goods	40	200
	Gross profit		100
Less:	Selling & administration expenses		30
			70
Add:	Investment income		10
	Profit before interest and tax (*PBIT*)		80
Less:	Interest		20
	Profit before tax (*PBT*)		60
Less:	Tax		30
	Profit after tax (*PAT*)		30
	Appropriations:		
	Interim dividend (10% on 100 lakh)	10	
	Final dividend (10% on 100 lakh)	10	20
	Profit transferred to reserve and surplus		10
			30

Ashwin Ltd.
Balance Sheet
as on 31st March, 2016 (₹ *in lakh*)

Liabilities		₹	*Assets*		₹
Share capital		150	Fixed Assets:		
Reserve and surplus		10	Gross block	100	
			Less: Depreciation	20	80
Loan	100		Investments		100
Less: Instalment paid	20	80	Current Assets:		
Current Liabilities and Provisions:			Raw materials stock	24	
Sundry creditors	20		Finished goods	40	
Provision for tax	30		Debtors	50	
Proposed dividend	10	60	Cash balance on hand and at bank	6	120
		300			300

Working Notes:

(₹*in lakh)*

I (1)	Sales Turnover		(1250 × ₹ 24,000)	300
(2)	*PAT*		(10% of 300 lakh)	30
(3)	Interest		(20% of 100 lakh)	20
(4)	*PBIT*	=	Interest × Interest Coverage Ratio = 20 lakh × 4 =	80
(5)	*PBIT*	=	*PBIT* – Interest = 80 – 20 =	60
(6)	Tax	=	*PBT* – *PAT* = 60 – 30 =	30
(7)	Investment income		(100 lakh × [12 ¸ 100] × [10 ¸ 12]	10
II (1	Total assets	=	Sales Turnover	300
(2)	Total liabilities	=	Total Assets	300
(3)	Reserves & surplus	=	*PAT* – Interim Dividend – Final Dividend = 30 – 10 – 10 =10	

(4) Currents liabilities = Total Liabilities – (Share Capital + Reserves & Surplus + Loan)

= $300 - [150 + 10 + 80] =$ 60

(5) Current assets = Current Liabilities × 2 = 60 × 2 = 120

(6) Sundry creditors = Total Current Liabilities – (Provision for Taxation + Proposed Dividends)

= $60 - (30 + 10) =$ 20

(7) Sundry debtors = Sales/Debtor Turnover Ratio = 300/6 = 50

III (1) Purchase (credit) = Creditors' Turnover Ratio ´ Creditors = 6 × 20 = 120

(2) Raw materials stock = $\dfrac{\text{Raw Materials consumed}}{\text{Raw Materials Turnover Ratio}} = \dfrac{\text{Purchases} - \text{Closing Stock}}{4}$

$= \dfrac{120 - \text{Closing Stock}}{4}$

Let Closing stock of raw materials be *x*. The following equation can be made:

$x = 120 - x \div 4$

$5x = 120$

$x = 24$

Closing Stock of Raw materials

(3) Raw materials consumed = Purchases – Closing Stock of Raw Materials

$= 120 - 24 =$ 96

(4) Closing stock of finished goods = Total Current Assets – (Raw Materials Closing Stock + Closing Debtors + Closing Cash on Hand and at Bank)

$= 120 - (24 + 50 + 6) =$ 40

(5) Cost of production = Cost of Closing Finished Stock × $\dfrac{\text{Vehicles Produced}}{\text{Vehicles in Closing Stock}}$

$= 40 \times [1500 \div 250] =$ 240

(6) Direct labour = 35% of Cost of Production = (35 ÷ 100) × 240 = 84

(7) Depreciation:

Debt Service Coverage Ratio = $\dfrac{PAT + \text{Depreciation} + \text{Interest}}{\text{Loan Instalment} + \text{Interest}}$

$1.75 = \dfrac{30 + \text{Depreciation} + 20}{20 + 20}$

Depreciation $= (1.75 \times 40) - 50 =$ 20

(8) Manufacturing overheads = Cost of Production – (Raw Materials Consumed + Direct Labour + Depreciation)

$= 240 - [96 + 84 + 20]$ 40

(9) Cost of goods sold = Cost of Production – Closing Stock of Finished Goods

$= 240 - 40 =$ 200

NOTES

(10)	Gross Profit	=	Sales – Cost of Goods Sold	
		=	300 – 200 =	100
(11)	Selling and administration expenses			=
			Gross Profit – (*PBIT* – Investment Income)	
		=	100 – (80 – 10) =	30
IV (1)	Net fixed assets	=	Total Assets – (Investments + Current Assets)	
		=	300 – (100 + 120) =	80
(2)	Gross fixed assets	=	Net Fixed Assets + Depreciation = 80 + 20 =	100

Illustration 7.5: With the following ratios and further information given below, prepare a trading account, profit and loss account and a balance sheet of Shri Narain:

(*i*)	Gross Profit Ratio	25%
(*ii*)	Net Profit/Sales	20%
(*iii*)	Stock-turnover Ratio	10
(*iv*)	Net Profit/Capital	1/5
(*v*)	Capital to Total Liabilities	1/2
(*vi*)	Fixed Assets/Capital	5/4
(*vii*)	Fixed Assets/Total Current Assets	5/7
(*viii*)	Fixed Assets	₹10,00,000
(*ix*)	Closing Stock	₹1,00,000

Solution:

Trading and Profit & Loss Account

for the year ended...

Particulars	₹	*Particulars*	₹
To Opening Stock	20,000	By Sales	8,00,000
To Purchases (balancing figure)	6,80,000	By Closing Stock	1,00,000
To Gross Profit c/d	2,00,000		
	9,00,000		9,00,000
To Expenses	40,000	By Gross Profit b/d	2,00,000
To Net Profit	1,60,000		
	2,00,000		2,00,000

Balance Sheet

as on....

Liabilities		₹	*Assets*	₹
Capital:			Fixed Assets	10,00,000
Openings balance	6,40,000		Closing Stock	1,00,000
Add: Net Profit	1,60,000	8,00,000	Other Current Assets (balancing figure)	13,00,000
Liabilities		16,00,000		
		24,00,000		24,00,000

NOTES

Working Notes:

1. Fixed Assets are ₹10,00,000
   Fixed Assets ÷ Capital = 5 ÷ 4
   ∴ Capital = 10,00,000 × 4 ÷ 5 = ₹8,00,000
2. Capital is 1/2 of Total Liabilities
   ∴ Liabilities = 8,00,000 × 2 = ₹16,00,000
3. Net Profit is 1/5 of Capital
   ∴ Net Profit = 8,00,000 × 1/5 = ₹1,60,000
4. Net Profit is 20% of Sales
   ∴ Sales = 1,60,000 × 100 ÷ 20 = ₹8,00,000
5. Gross Profit Ratio is 25% of Sales
   ∴ Gross Profit = ₹2,00,000
6. Stock Turnover Ratio (*i.e.*, Cost of Sales/Average Inventory) is 10
   Cost of Sales = Sales – Gross Profit
   = ₹8,00,000 – 2,00,000 = ₹6,00,000
   ∴ Average Inventory is ₹6,00,000
7. Closing Stock is ₹1,00,000
   Average Inventory is ₹60,000
   ∴ Opening Stock is ₹20,000
8. Fixed Assets are ₹10,00,000
   Fixed Assets/Total Current Assets = 5 ÷ 7
   ∴ Total Current assets are 10,00,000 × 7/5 ₹14,00,000
   Stock is ₹1,00,000
   ∴ Other Current Assets are ₹13,00,000

7.4 PROBLEMS AND SOLUTIONS

Now that you have learnt all about the computation of ratios statements from ratios. In this section, you are provided with practical problems for practice.

Problem 7.1

From the following information, determine opening and closing stocks:

Stock Turnover	:	5 times
Total Sales	:	₹2,00,000
Gross Profit	:	25% of sales

The closing stock value was more by ₹4,000 than the opening stock.

Solution:

Gross Profit = 2,00,000 × 25% = ₹50,000

NOTES

Cost of Goods Sold = Sales – Gross Profit

= ₹2,00,000 – ₹50,000 = ₹1,50,000

Let the Opening Stock = X

Closing Stock = X + ₹4,000

Stock Turnover = 5 times

$$\text{Stock Turnover Ratio} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$$

$$5 = \frac{₹1,50,000}{\frac{1}{2}\ (X + X + ₹4,000)}$$

5X + ₹10,000 = ₹1,50,000

5X = ₹1,50,000 – ₹10,000

X = ₹28,000 (Opening Stock)

Closing Stock = ₹28,000 + ₹4,000 = ₹32,000

Thus, opening stock is ₹28,000 and closing stock is ₹32,000.

Problem 7.2

Assuming the current ratio of a company is 2, state in each of the following cases whether the ratio will improve or decline or will have no change—with reasons.

(*a*) Payment of current liability

(*b*) Purchase of fixed asset

(*c*) Cash collected from debtors

(*d*) Bills receivable dishonored

Solution:

Suppose current assets are ₹40,000 and current liabilities ₹20,000 so that the current ratio is 40,000 : 20,000 or 2 : 1

(*a*) **Payment of current liability** Suppose current liability of ₹5,000 is paid. Then the changed current assets would be ₹40,000 – 5,000 = ₹35,000 and changed current liabilities = 20,000 – 5,000 = ₹15,000

The new ratio would be 35,000 : 15,000 or 2.33 : 1 Thus the ratio has improved.

(*b*) **Purchase of fixed assets** Suppose machinery of ₹10,000 is purchases. Current assets (cash) will be reduced from 40,000 to ₹30,000 without affecting current liabilities. The new ratio would be 30,000 : 20,000, i.e., 1.5 : 1. Thus the ratio has declined.

(*c*) **Cash collected from debtors** This will reduced debtors but increase cash. Both items being current assets, the current assets will not change

and current ratio will also not change.

(*d*) **Bills receivable dishonored** The current ratio will not change because there will be no change in current assets or current liabilities.

NOTES

Problem 7.3

From the information given below, calculate the following ratios:

(*i*) Quick Ratio (*ii*) Stock Turnover Ratio

(*iii*) Debt–Equity Ratio (*iv*) Return on Investment

Information: Current Assets ₹5,00,000; Opening Stock ₹50,000; Closing Stock ₹1,50,000; Cost of Goods Sold ₹12,00,000; Gross Profit ₹2,00,000; Indirect expenses ₹20,000; Equity Share Capital ₹7,00,000; 10% Preference Share Capital ₹3,00,000; 12% Debentures ₹2,00,000; Current Liabilities ₹2,00,000; General Reserve ₹1,00,000.

Solution:

(*i*) **Quick ratio** $= \frac{\text{Quick assets}}{\text{Current liabilities}} = \frac{5,00,000 - 1,50,000}{2,00,000} = \frac{3,50,000}{2,00,000}$

$= \mathbf{1.75 : 1}$

(*ii*) **Stock turnover ratio** $= \frac{\text{Cost of goods sold}}{\text{Average stock}}$

$= \frac{12,00,000}{\frac{1}{2}(50,000 + 1,50,000)} = \frac{12,00,000}{1,00,000} = \mathbf{12\ times}$

(*iii*) **Debt–equity ratio** $= \frac{\text{Long-term debts}}{\text{Shareholders funds}}$

$= \frac{2,00,000}{7,00,000 + 3,00,000 + 1,00,000} = \frac{2,00,000}{11,00,000}$

$= \mathbf{2 : 11}$

(*iv*) **Return on investment**

$$= \frac{\text{Profit before intrest and tax (PBIT)}}{\text{Capital employed}}$$

$$= \frac{\text{Gross Profit – Indirect exp. + Interest on debentures}}{\text{Eq. share capital + Pref. capital + Debentures + General Reserve}}$$

$$= \frac{2,00,000 - 20,000 + 24,000}{7,00,000 + 3,00,000 + 2,00,000 + 1,00,000}$$

$$= \frac{2,04,000}{13,00,000} \times 100 = \mathbf{15.69\%}$$

NOTES

Problem 7.4

Calculate the following ratios from the given Balance Sheet:

(*i*) Current Ratio

(*ii*) Fixed Assets to Net Worth Ratio

(*iii*) Debt–Equity Ratio

(*iv*) Return on Capital Employed

Balance Sheet

Liabilities	₹	*Assets*	₹
600 Shares of ₹100 each	60,000	Land	40,000
General Reserve	35,000	Plant	20,000
Dividend Equalization Reserve	5,000	Machines	27,500
Long-term Loans	20,000	Investments	25,000
Bills Payable	30,000	Inventories	30,000
Provision for tax	5,000	Bills Receivable	13,500
Profit and Loss A/c		Cash and Bank	12,000
Balance	1,000	Preliminary expenses	8,000
Current year	20,000		21,000
	1,76,000		1,76,000

Solution:

(*i*) **Current Ratio** $= \frac{\text{Current Assets}}{\text{Current Liabilities}} = \frac{₹55,500}{₹35,000} = 1.56 : 1$

Current Assets = Inventories + Bills Receivable + Cash and Bank

= 30,000 + 13,500 + 12,000 = ₹55,500

Current Liabilities = Bills Payable + Provision for Tax

= ₹30,000 + ₹5,000 = ₹35,000

(*ii*) **Fixed Assets to Net Worth Ratio** $= \frac{\text{Fixed Assets}}{\text{Net Worth}} = \frac{₹1,12,500}{₹1,13,000}$

= **0.99 : 1**

Fixed Assets = Land + Plant + Machines + Investments

= 40,000 + 20,000 + 27,500 + 25,000 = ₹1,12,500

Net Worth = Share Capital + General Reserve + Dividend Equalization Reserve

+ Profit and Loss Account – Preliminary expenses

= 60,000 + 35,000 + 5,000 + 21,000 – 8,000

= ₹1,13,000

(*iii*) **Debt–Equity Ratio** $= \frac{\text{Long-term debts}}{\text{Shareholder's funds}} = \frac{20,000}{1,13,000}$ = **0.17 : 1**

NOTES

Long-term debts = Long-term loans = ₹20,000

Shareholder's funds = Net Worth = ₹1,13,000

(*iv*) **Return on Capital Employed** $= \dfrac{\text{Net Profit before interest and tax}}{\text{Capital employed}} \times 100$

$= \dfrac{₹25,000}{₹1,33,000}$ = **18.79%**

Net profit before interest and tax = Net Profit + Tax

= 20,000 + 5,000 = ₹25,000

Capital employed = Share capital + General Reserve + Dividend Equalization Reserve

+ Long-term loans + Profit

– Prel. expanses

= 60,000 + 35,000 + 5,000 + 20,000

+ 21,000 – 8,000

= **₹1,33,000**

Problem 7.5

A company having a net working capital of ₹2.8 lakh as on 30-6-2012 indicates the following financial ratios and performance figures:

Current ratio	2.4
Liquidity ratio	1.6
Inventory turnover (on cost of sales)	8
Gross profit on sales	20%
Credit allowed (months)	1.5

The company's fixed assets is equivalent to 90% of its net worth (share capital *plus* reserves) while reserves amounted to 40% of share capital.

Prepare the Balance Sheet of the company as on 30-6-2012 showing step by step calculations.

Solution:

1. **Calculation of current assets and current liabilities**

$$\text{Current ratio} = \frac{\text{Current Assets (CA)}}{\text{Current Liabilities (CL)}}$$

$$2.4 = \frac{CA}{CL}$$

$$CA = 2.4\ CL$$

NOTES

$$\text{Net Working Capital} = CA - CL = ₹2,80,000$$

$$2.4\ CL - CL = 2,80,000$$

$$1.4\ CL = 2,80,000$$

$$CL = \frac{2,80,000}{1.4} = ₹2,00,000$$

$$\text{Thus current liabilities} = ₹2,00,000$$

$$\text{Current assets} = 2.4\ CL = 2.4 \times 2,00,000 = \mathbf{₹4,80,000}$$

2. **Calculation of Stock**

$$\text{Liquidity ratio} = \frac{CA - \text{Stock}}{CL}$$

$$1.6 = \frac{4,80,000 - \text{Stock}}{2,00,000}$$

$$2,00,000 \times 1.6 = 4,80,000 - \text{Stock}$$

$$\text{Stock} = 4,80,000 - 3,20,000 = \mathbf{₹1,60,000}$$

3. **Calculation of Cost of Sales**

Inventory turnover ratio= 8

$$8 = \frac{\text{Cost of Sales}}{\text{Stock}} = \frac{\text{Cost of Sales}}{1,60,000}$$

$$\text{Cost of Sales} = 1,60,000 \times 8 = \mathbf{₹12,80,000}$$

4. **Calculation of Gross Profit**

Gross Profit on sales = 20%

∴ Gross profit on cost of sales = 25%

$$\text{Gross profit} = ₹12,80,000 \times 25\% = \mathbf{₹3,20,000}$$

5. **Calculation of Sales**

	Cost of sales	₹12,80,000
Add:	Gross Profit	3,20,000
	Sales	**₹16,00,000**

6. **Calculation of Debtors**

$$\text{Average collection period} = \frac{\text{Debtors}}{\text{Credit Sales}} \times 12 \text{ months}$$

$$1.5 \text{ months} = \frac{\text{Debtors}}{16,00,000} \times 12$$

$$12 \times \text{Debtors} = 16,00,000 \times 1.5$$

$$\text{Debtors} = \frac{24,00,000}{12} = \mathbf{₹2,00,000}$$

NOTES

7. **Calculation of Cash**

$$\text{Current assets} = \text{Stock} + \text{Debtors} + \text{Cash}$$
$$4{,}80{,}000 = 1{,}60{,}000 + 2{,}00{,}000 + \text{Cash}$$
$$\text{Cash} = 1{,}20{,}000$$

8. **Calculation of Fixed Assets**

$$\text{Fixed assets} = 90\% \text{ of net worth}$$
$$\text{Net worth} = \text{Capital} + \text{Reserves}$$
$$\text{Also, Net worth} = \text{Fixed assets} + \text{Net working capital}$$
$$= 0.9 \text{ Net worth} + 2{,}80{,}000$$
$$0.1 \text{ Net worth} = 2{,}80{,}000$$
$$\text{Net worth} = \frac{2{,}80{,}000}{0.1} = ₹28{,}00{,}000$$
$$\text{Fixed assets} = 28{,}00{,}000 \times 90\% = \mathbf{₹25{,}20{,}000}$$

9. **Calculation of Capital and Reserves**

Net worth (*i.e.*, Capital + Reserves) = ₹28,00,000

$$\text{Reserves} = 40\% \text{ of Capital}$$
$$\therefore \text{Capital} + 0.4 \text{ Capital} = 28{,}00{,}000$$
$$1.4 \text{ Capital} = 28{,}00{,}000$$
$$\text{Capital} = \frac{28{,}00{,}000}{1.4} = \mathbf{₹20{,}00{,}000}$$
$$\text{Reserves} = 20{,}00{,}000 \times 40\% = \mathbf{₹8{,}00{,}000}$$

Balance Sheet as on 30 June 2012

Liabilities	₹	*Assets*	₹
Share capital	20,00,000	Fixed assets	25,20,000
Reserves	8,00,000	Stock	1,60,000
Current liabilities	2,00,000	Debtors	2,00,000
		Cash	1,20,000
	30,00,000		30,00,000

Problem 7.6

Prepare a Balance Sheet from the particulars furnished hereunder:

Stock Velocity	:	6
Gross Profit Margin	:	20%
Capital Turnover Ratio	:	2
Fixed Assets Turnover Ratio	:	4
Debt Collection Period	:	2 months
Creditors Payment Period	:	73 days

Gross Profit was ₹60,000; Excess of closing stock over opening stock was ₹5,000.

Difference in Balance Sheet represents Bank Balance. The entire sales and purchases are made on credit basis.

NOTES

Solution:

Computation of various items for balance sheet:

1. **Calculation of cost of goods sold**

$$\text{Gross Profit Ratio} = \frac{\text{Gross Profit}}{\text{Sales}} \times 100$$

Or

$$\text{Sales} = \frac{\text{Gross Profit}}{\text{Gross Profit Ratio}}$$

$$\text{Sales} = \frac{60,000}{20\%} = ₹3,00,000$$

$$\text{Gross Profit} = 3,00,000 \times 20\% = ₹60,000$$

$$\text{Cost of Goods Sold} = \text{Sales} - \text{Gross Profit}$$

$$= ₹3,00,000 - ₹60,000 = \mathbf{₹2,40,000}$$

2. **Calculation of Opening and Closing Stocks**

Taking stock velocity as stock turnover

$$\text{Stock Velocity} = \frac{\text{Cost of Goods Sold}}{\text{Average Stock}}$$

$$6 = \frac{₹2,40,000}{\text{Average Stock}}$$

$$\text{Average stock} = \frac{2,40,000}{6} = ₹40,000$$

$$\text{Opening stock} = 40,000 - \frac{5,000}{2} = \mathbf{₹37,500}$$

$$\text{Closing stock} = 40,000 + \frac{5,000}{2} = \mathbf{₹42,500}$$

3. **Calculation of Capital**

$$\text{Capital Turnover Ratio} = \frac{\text{Cost of Sales}}{\text{Capital}}$$

or

$$\text{Capital} = \frac{\text{Cost of Sales}}{\text{Capital turnover ratio}}$$

$$\text{Capital} = \frac{2,40,000}{2} = \mathbf{₹1,20,000}$$

NOTES

4. **Calculation of Fixed Assets**

$$\text{Fixed Assets Turnover Ratio} = \frac{\text{Cost of Sales}}{\text{Fixed Assets}}$$

$$4 = \frac{₹2,40,000}{\text{Fixed Assets}}$$

$$\text{Fixed Assets} = \frac{2,40,000}{4} = \textbf{₹60,000}$$

5. **Calculation of Debtors**

Debt collection period = 2 months

$$\text{Debtors Turnover Ratio} = \frac{\text{12 months}}{\text{Debt Collection period}} = \frac{12}{2} = \text{6 times}$$

$$\text{Also Debtors Turnover Ratio} = \frac{\text{Credit Sales}}{\text{Debtors}}$$

$$\text{Debtors} = \frac{3,00,000}{6} = \textbf{₹50,000}$$

6. **Calculation of Creditors**

Creditors' payment period = 73 days

$$\text{Creditors' Turnover Ratio} = \frac{\text{365 days}}{\text{73 days}} = \text{5 times}$$

The amount of credit purchases is determined as follows:

Cost of Goods Sold = Opening Stock + Purchases – Closing Stock

2,40,000 = ₹37,500 + Purchases – ₹42,500

Purchases = ₹2,45,000

$$\text{Creditors' Turnover Ratio} = \frac{\text{Credit Purchases}}{\text{Creditors}}$$

or
$$\text{Creditors} = \frac{\text{Cr. purchases}}{\text{Capital turnover ratio}}$$

$$\text{Creditors} = \frac{2,45,000}{5} = \textbf{₹49,000}$$

NOTES

Balance Sheet as on ....

Liabilities	₹	*Assets*	₹
Capital	1,20,000	Fixed Assets	60,000
Creditors	49,000	Closing Stock	42,500
		Debtors	50,000
		Cash (Balancing Figure)	16,500
	1,69,000		1,69,000

Alternative Method In the calculations shown above, cost of goods sold has been taken in computing capital turnover ratio and fixed assets turnover ratio. Alternatively, instead of cost of goods sold, sales may be taken. In that case,

$$\text{Capital turnover ratio} = \frac{\text{Sales}}{\text{Capital}}$$

or

$$\text{Capital} = \frac{\text{Sales}}{\text{Capital turnover ratio}}$$

$$\text{Capital} = \frac{3,00,000}{2} = ₹1,50,000$$

$$\text{Fixed assets turnover ratio} = \frac{\text{Sales}}{\text{Fixed assets}}$$

or

$$\text{Fixed assets} = \frac{\text{Sales}}{\text{Fixed assets turnover ratio}}$$

$$\text{Fixed assets} = \frac{3,00,000}{4} = ₹75,000$$

The values of Capital and Fixed Assets have changed and the Balance Sheet figures will also change accordingly as follows:

Balance Sheet as on.................

Liabilities	₹	*Assets*	₹
Capital	1,50,000	Fixed Assets	75,000
Creditors	49,000	Closing Stock	42,500
		Debtors	50,000
		Cash & Bank (Balancing Figure)	31,500
	1,99,000		1,99,000

Check Your Progress

1. 'Reliability of ratios depends upon the correctness of the basic data'. Explain.
2. Why are ratios not always comparable?
3. What does the difference between net worth and reserves and surplus gives?

7.5 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

NOTES

1. Ratios obviously will be only as reliable as the basic data on which they are based. If the Balance Sheet or Profit and Loss Account figures are themselves unreliable, it will be a mistake to put any reliance on the ratios worked out on the basis of that Balance Sheet or Profit and Loss Account.
2. When the ratios of two firms are being compared, it should be remembered that different firms may follow different accounting practices. For example, one firm may charge depreciation on straight line basis and the other on diminishing value. Similarly, different firms may adopt different methods of stock valuation. Such differences will not make some of the accounting ratios strictly comparable. However, use of accounting standards makes these ratios comparable.
3. The difference between net worth and reserves and surplus gives the share capital.

7.6 SUMMARY

- Ratio analysis is one of the most important tools of financial analysis. Financial health of a business can be diagnosed by this tool. Such an analysis offers the following advantages: It is useful in analysis of financial statements, improving future performance, inter-firm comparison, efficiency of a business, and simplifying accounting figures.
- Ratio analysis is a very useful technique. But one should be aware of its limitations as well. The following limitations should be kept in mind while making use of ratio analysis in interpreting the financial statements: Reliability of ratios depends upon the correctness of the basic data, the individual ratio may be meaningless, ratios are not always comparable, they sometimes give misleading picture, it ignores qualitative factors, the changes in price levels make it ineffective, there is no single standard for comparison, they are no indicators of future, etc.
- It is possible to use to ratios or financial ratios and other relevant figures to construct important financial statements such as the Profit and Loss Account and Balance Sheet. The numerical ratios or figures provided are used as a starting point for deriving missing figures through interpolation.

7.7 KEY WORDS

- **Balance Sheet (or Statement of Financial Position):** It reflects the assets, liabilities and capital as on a certain date.

- **Profit and Loss Account (or Income Statement):** It shows the results of operations, i.e., profit or loss during a certain period.

7.8 SELF ASSESSMENT QUESTIONS AND EXERCISES

NOTES

Short-Answer Questions

1. What are the advantages or uses of ratio analysis?
2. List the limitations of ratio analysis.
3. From the following information, find out:

   (*a*) Current Assets (*b*) Current Liabilities
   (*c*) Liquid Assets (*d*) Proprietor's Funds
   (*e*) Share Capital (*f*) Fixed Assets
   (*g*) Stock-in-trade

   Information: (*i*) Current ratio 2.5; (*ii*) Liquid ratio 1.5; (*iii*) Proprietary ratio (fixed assets/proprietary funds) 0.75; (*iv*) Working Capital ₹ 60,000; (*v*) Reserves and Surplus ₹ 40,000; and (*vi*) Bank Overdraft ₹ 10,000. There is no long-term loan or fictitious asset.

Long-Answer Questions

1. A company having a net working capital of ₹2.8 lakh as on 30-6-2012 indicates the following financial ratios and performance figures:

Current ratio	2.4
Liquidity ratio	1.6
Inventory turnover (on cost of sales)	8
Gross profit on sales	20%
Credit allowed (months)	1.5

   The company's fixed assets is equivalent to 90% of its net worth (share capital plus reserves) while reserves amounted to 40% of share capital.

   Prepare the Balance Sheet of the company as on 30-6-2012 showing step by step calculations.

2. Prepare a Balance Sheet from the particulars furnished hereunder:

Stock Velocity	:	6
Gross Profit Margin	:	20%
Capital Turnover Ratio	:	2
Fixed Assets Turnover Ratio	:	4
Debt Collection Period	:	2 months
Creditors Payment Period	:	73 days

NOTES

Gross Profit was ₹60,000; Excess of closing stock over opening stock was ₹5,000.

Difference in Balance Sheet represents Bank Balance. The entire sales and purchases are made on credit basis.

3. The following figures and ratios relate to a company:

1.	Sales for the year (all credit)	₹30 lakh
2.	Gross profit ratio	25%
3.	Fixed assets turnover (based on cost of goods sold)	1.5
4.	Stock turnover (based on cost of goods sold)	6
5.	Liquid ratio	1 : 1
6.	Current ratio	1.5 : 1
7.	Debtors collection period	2 months
8.	Ratio of reserves and surplus to share capital	0.6 : 1
9.	Capital gearing ratio	0.5
10.	Fixed assets to net worth	1.20 : 1

Calculate the necessary details and prepare the Balance Sheet of the company.

7.9 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice*, 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management,* 4th edition. New Delhi: Vikas Publishing House.

UNIT 8 FUND FLOW ANALYSIS

NOTES

Structure

8.0 INTRODUCTION

The traditional balance sheet reveals the financial position of an organization by mentioning not only the sources of its resources but also the deployment of its resources. However, such a statement fails to identify the factors that are responsible for the change in the financial position of the organization between two financial periods. The identification and analysis of the said factors are essential as they have a direct impact on the working capital. It is pertinent to mention here that the management of working capital has always been recognized as a prerequisite for the smooth functioning of the organization. Therefore, the management always prefers to have a study that would help it to identify and analyse the factors that result in the change of working capital. In fact, such changes generally take place either due to an inflow or outflow of fund which is not revealed by the traditional balance sheet. The most popular framework used for this purpose is statement of change in financial position. The said statement aims to describe the changes in the financial position of a concern during a particular period. In fact, such a statement provides the basis for policy formulation by acting as a financial reporting media. The statement of changes in financial position is also known as funds flow statement, where got were gone statement, management funds statement, etc. However, we may use the term funds flow statement in this book.

8.1 OBJECTIVES

After going through this unit, you will be able to:

- Explain the meaning and definition of fund

- Discuss the need, managerial uses and limitations of fund flow analysis
- Describe the preparation of schedule of change in working capital and the fund flow statement

NOTES

8.2 MEANING AND DEFINITION OF FUND

For a clear understanding of the funds flow analysis, the meaning of the terms *fund* and *flow* must be clear in one's mind.

Fund

The term *fund* can be used both in broader and narrow sense. In broader sense, it represents the working capital (current assets—current liabilities) of a concern while in narrow sense it represents only cash balances of a firm. Accordingly two statements can be prepared, viz.,

- *Funds flow statement:* A statement prepared on the basis of net current assets/working capital which is calculated by subtracting current liabilities from current assets.
- *Cash flow statement:* A statement that is governed by the narrow sense of fund, *i.e.*, cash balances, and therefore, considers only receipts and payments of cash and transactions affecting cash position in its preparation.

Flow

Flow of fund refers to a business transaction that causes a change in the amount of fund (working capital) that exists before the maturity of the transaction. The flow of fund is recognized from the degree of change in the amount of working capital. If a transaction increases the amount of working capital, it is referred to as *source of fund* (inflow) whereas the transaction that decreases the amount of working capital results in the *application of fund* (outflow). If a transaction fails to cause a change in the amount of working capital, it does not amount to flow of fund. Suppose a company has a fund (Current assets–Current liabilities) of ₹ 1,20,000 on 31 December 2018. On 1January 2019, it purchased a computer costing ₹ 10,000 that brings decline in the amount of cash to the extent of ₹ 10,000 which in turn decreases the amount of working by ₹ 10,000. Accordingly, the amount of fund is reduced to ₹ 1,10,000 (1,20,000–10,000). The purchase of computer is treated as flow of fund (outflow) because it brought a change in the amount of working capital (fund) from ₹ 1,20,000 to ₹ 1,10,000.

After analysing the above example, it is clear that a change in the amount of working capital from ₹ 1,20,000 to ₹ 1,10,000 is the result of change in the two items of the company. Firstly, the amount of cash (a current item) is reduced by ₹ 10,000, and secondly, the amount of fixed asset (non-current item) is increased by the same amount. From this fact, we can conclude that:

- the flow of fund (change in working capital) occurs when a similar change is observed simultaneously in one current and one non-current account as a result of a single transaction;
- the transaction that involves only current accounts or only non-current accounts does not amount to flow of fund (change in working capital); and
- the flow of fund, *i.e.*, change in working capital has a similar impact both on current and non-current accounts. Symbolically, this can be expressed as

NOTES

$$\Sigma\Delta WC = \Sigma\Delta\ CA = \Sigma\Delta\ NA$$

where, $\Sigma\Delta$ = aggregate change in

WC = working capital

CA = current accounts

NA = non-current accounts

Thus, the aggregate change in the working capital of a concern during a particular period can be computed by considering all changes which occurred either in the current accounts or in the non-current accounts. The changes which occurred in the current accounts as a result of flow of fund are reflected in a statement known as *schedule of changes in working capital*, whereas similar changes in the non-current accounts are shown in the *statement of changes in financial position* also known as *funds flow statement*.

In the above paragraphs we saw that the flow of fund is identified by analysing changes in current items and non-current items. Therefore, it becomes imperative to have a detailed list of current and non-current accounts.

Current Accounts

Current accounts consist of current assets and current liabilities, like:

- Current assets:
  - o inventories
  - o bills receivable
  - o cash and bank balances
  - o investments
  - o sundry debtors
  - o prepaid expenses (temporary)
- Current liabilities:
  - o bills payable
  - o sundry creditors
  - o outstanding expenses and dues
  - o proposed dividend

- o provision for taxation
- o bank overdraft
- o provision against current assets

NOTES

Non-current Accounts

Non-current accounts comprise fixed assets and long-term liabilities like:

- Fixed assets:
- land and building
- plant and machinery
- furniture
- long-term investment
- goodwill
- preliminary expenses
- trade marks
- patent rights
- deferred expenses
- discount on issue of shares/debentures
- debit balances of profit and loss account
- Long-term liabilities:
- share capital (equity and preferential)
- share premium account
- share forfeited account
- capital redemption reserve
- capital reserves
- loans (long-term)
- debentures
- general reserves
- provision for depreciation on fixed assets
- bank loan
- credit balances of profits and loss account

Illustration 8.1: Explain the effect of the below-mentioned transactions on fund (working capital):

(i) Purchase 6,000 shares at ₹ 10 each (temporary).

(ii) Further capital of ₹ 12,000 invested during the year.

(iii) Sale of unused plant (completely depreciated) for ₹ 40,000.

(iv) Paid cash to sundry creditors ₹ 30,000.

(v) Purchase of Insurance Policy (5 years) of ₹ 65,000.

NOTES

Solution

(i) This transaction will not affect the working capital (fund) because of its temporary nature. On one hand, current assets will be increased by temporary investment in shares to the extent of ₹ 60,000, and on the other hand, cash will go out of the business which will reduce the current asset by the same amount. Hence, current assets will not be affected.

(ii) The additional capital of ₹ 12,000 will increase the share capital, a non-current item, and at the same time, it will also increase cash, a current item. Thus it will result in the inflow of fund (source).

(iii) On the one hand, sale of unused plant will decrease the non-current asset (plant), and on the other hand, it will increase the amount of current asset (cash) by ₹ 40,000. Therefore, it the amount of fund will increase.

(iv) The transactions will change only current account, viz., cash and sundry creditors, leaving fund unaffected.

(v) Purchase of insurance policy will affect current asset (cash) on the one hand and non-current asset (insurance policy) on the other hand. Thus, the transaction will result in the outflow of fund to the extent of ₹ 65,000.

8.2.1 Need, Managerial Uses and Limitations of Fund Flow Analysis

Funds flow statement indicates the amount of change in various balance sheet items between two accounting dates. It shows the sources and uses of funds during an accounting period. A funds statement is prepared in summary form to indicate changes (and trends if prepared regularly) occurring in items of financial conditions between two different balance sheet dates. According to Anthany, 1970:

> *The funds flow statement describes the sources from which additional funds were derived and the use to which these sources were put.*

Foulke, 1976 defines funds flow statement as:

> A statement of sources and application of funds is a technical device designed to analyse the changes in the financial condition of a business enterprise between two dates.

As per professor MA Sahaf, funds flow statement *is a technique used to summarize the financial operations of an organization by studying the sources and application of funds during the accounting period*. Such a statement helps to identify the changes which have taken place and to demonstrate their impact upon the liquid resources of the business. It provided a clear indication of the changes which have taken place in the financial position of the enterprise, particularly for the people who are not well versed in reading balance sheets.

NOTES

Managerial Uses of Funds Flow Statement and Need

Funds flow statement plays a significant role in the evaluation of overall performance. Such a statement provides insights into the financial and investing operations of a business. It throws light on the financial strategy of a firm and guides financial experts in the interpretation and predictions of the same. The National Association of Accountants, 1971 in their bulletin list the following uses of this statement:

- estimating the amount of funds needed for the growth;
- improving rate of income on assets;
- planning temporary investments of surplus funds and planning for the working capital;
- securing additional funds when needed; and
- planning the payment of dividends.

Further, an effective funds flow analysis can offer the following benefits to a business firm:

- It helps the management in operating and investment decisions by providing a complete picture of sources and applications of funds.
- It guides experts in the formulation of future financial policies as it discloses the financial deficiencies of a specified period.
- It can make possible the efficient and economical utilization of future financial resources.
- It provides additional and significant data for decision making which is not presented by historical statements.
- It highlights the relationship between the working capital and the net income.
- It evaluates past financial performance by disclosing the means and uses of resources.
- It proves a meaningful technique for economic analysis.

Limitations of Funds Flow Statement

Despite its number of uses, the funds flow statement suffers from number of limitations which are listed below:

- It fails to cover as sufficient information as disclosed by income statement or balance sheet and as such cannot replace such statements.
- It is of secondary nature as it is prepared with the information as supplied by financial statements.
- The statement ignores the changes in working capital items, and therefore, fails to throw light on the financial position of the concern.

NOTES

- As this statement is simply re-arrangement of data as supplied by financial statement, the accuracy of the statement is doubtful.
- It is a crude device compared to financial statement because it does not touch non-fund items.
- It fails to reveal continuous changes.

Check Your Progress

1. Define the term fund in the broader and narrow sense.
2. Where are the changes in the non-current accounts of a firm represented?
3. Name the category of non-current accounts which comprises of patents and deferred expenses.

8.3 PREPARATION OF SCHEDULE OF CHANGE IN WORKING CAPITAL AND THE FUND FLOW STATEMENT

Statement or schedule of changes in the working capital is a statement that compares the change in the amount of current accounts (current assets and current liabilities) on two balance sheet dates and highlights its impact on working capital. The format of this statement is as follows:

Statement or Schedule of Changes in Working Capital

	Amount 1st Year (₹)	Amount 2nd Year (₹)	Effect on Working Capital	
			Increase (+) (₹)	Decrease (–) (₹)
A. *Current Assets*:				
Cash				
Trade debtors				
Stock				
Bill receivables				
Pre-payments				
Others				
Total Current Assets (A)				
B. *Current Liabilities:*				
Trade creditors				
Bills payable				
Outstanding expenses				
Provision for income tax				
Proposes dividend				
Others				
Total Current Liabilities (B)				
Working Capital (A – B)				
Increase/Decrease in working capital				

NOTES

The changes in current accounts *i.e.*, current assets and current liabilities are to be computed by comparing the figures for such accounts in the current period with that of the previous period. The amount of change so computed for each item of the current account alongwith its impact on the amount of working capital is to be recorded in the schedule of change in working capital.

To analyse the effect on working capital as a result of change in current assets and current liabilities, the following facts should be considered:

	Nature of transaction	*Effect on working capital*
1.	Increase in current asset	Increase (+)
2.	Decrease in current asset	Decrease (–)
3.	Increase in current liabilities	Decrease (–)
4.	Decrease in current liabilities	Increase (+)

Illustration 8.2: The comparative balance sheet of M/s Suman Ltd. as on 31st December, 2011 and 2012 were as follows:

Items	*31st December*	
	2011 (₹)	*2012* (₹)
Assets:		
Land and building	1,02,000	1,10,000
Plant and machinery	56,000	44,000
Sundry debtors	32,000	24,000
Inventory	70,000	61,000
Bills receivable	23,000	17,000
Cash and bank balance	40,000	47,000
Total	3,23,000	3,03,000

Items	*31st December*	
	2011 (₹)	*2012* (₹)
Liabilities:		
Share capital	1,40,000	1,30,000
Debentures	38,400	28,600
Reserves	97,900	1,02,550
Provision for taxation	2,700	2,850
Proposed dividend	24,000	18,000
Bills payable	10,000	10,000
Sundry creditors	10,000	11,000
Total	3,23,000	3,03,000

Prepare a schedule of changes in working capital.

Solution

Schedule of Changes in Working Capital

Items	2011 (₹)	2012 (₹)	*Effect on Working Capital* Increase (+) (₹)	Decrease (–) (₹)
A. Current Assets:				
Sundry debtors	32,000	24,000		8,000
Inventory	70,000	61,000		9,000
Bills receivable	23,000	17,000		6,000
Cash and Bank balance	40,000	47,000	7,000	
Total Current Asset (A)	1,65,000	1,49,000		
B. Current Liabilities:				
Provision for taxation*	2,700	2,850		150
Proposed dividend*	24,000	18,000	6,000	
Bills payable	10,000	10,000		
Sundry creditors	10,000	11,000		1,000
Total Current Liabilities (B)	46,700	41,850		
Working Capital (A – B)	1,18,300	1,07,150		
Decrease in working capital		11,150	11,150	
	1,18,300	1,18,300	24,150	24,150

Remember, both provision for taxation and dividends are treated here as current items.

Illustration 8.3: The summarized balance sheet of M/s Sugee Ltd. as on 31st March are given below:

Liabilities	2011 (₹)	2012 (₹)	*Assets*	2011 (₹)	2012 (₹)
Share capital	2,00,000	2,50,000	Land & Building	2,00,000	1,90,000
Debentures	50,000	90,000	Machinery	1,50,000	1,74,000
Profit & Loss A/c	30,500	30,600	Inventory	1,00,000	74,000
Bank loan	70,000	–	Sundry debtors	80,000	94,200
Creditors	1,50,000	1,35,200	Cash	500	8,600
Provision for taxation	30,000	35,000			
	5,30,500	5,40,800		5,30,500	5,40,800

You are required to prepare schedule of changes in working capital.

NOTES

Solution

Schedule of Changes in Working Capital

Items	2011 (₹)	2012 (₹)	*Effect on Working Capital*	
			Increase (+) (₹)	*Decrease* (–) (₹)
A. *Current Assets:*				
Inventory	1,00,000	74,000		26,000
Sundry debtors	80,000	94,200	14,200	
Cash	500	8,600	8,100	
Total Current Asset (A)	1,80,500	1,76,800		
B. *Current Liabilities:*				
Creditors	1,50,000	1,35,200	14,800	
Provision for taxation	30,000	35,000		5,000
Total Current Liabilities (B)	1,80,000	1,70,200		
Working capital (A – B)	500	6,600		
Increase in working capital	6,100			
	6,600	6,600	37,100	37,100

Statement of Sources and Applications of Funds

For the preparation of statement of sources and application of funds, we should be clear about the terms *sources* and *applications*.

Sources (inflow) refer to such business transactions that increase the amount of fund (working capital) and *applications* (outflow) means such transactions that result in the reduction of fund.

As discussed already, such an increase or decrease in the fund may take place when current and non-current items are changed simultaneously as a result of a transaction. The *increase* in the fund (source) is recorded as a *credit* and the *decrease* in the fund (application) is recorded as a debit. Therefore, credits represent sources of fund and debits represent application of fund. For better understanding of the concept of fund, important sources and uses of funds are summarized below:

Sources of Funds

- Operational profits or funds from operation;
- Issue of share capital or debentures;
- Sale of fixed assets and long-term investments (actual amount realized);
- Income from investments (dividend received); and
- Long-term loans.

Applications of Funds

- Repayment of capital (including redemption of preferential shares);
- Redemption of debentures;

- Payment of long-term loans;
- Purchase of investments;
- Purchase of fixed assets;
- Payment of taxation/proposed dividend if treated as non-current items; and
- Operational loss

Thus, from the above discussion, we may conclude that:

- Increase in non-current assets = Applications of funds
- Decrease in non-current assets = Sources of funds
- Increase in non-current liabilities = Sources of funds
- Decrease in non-current liabilities = Applications of funds

The dual-aspect concept of accounting suggests that the total amount of sources of funds must reconcile with the total amount of applications of funds. This principal is similar to that of the balance sheet principal where total assets are equal to total liabilities. Therefore,

- Sources of funds = Applications of funds
- Increase in liabilities + Decrease in assets = Decrease in liabilities + Increase in assets.

Format of Funds Flow Statement

Different formats are used for this purpose depending upon the objective of analysis. However, the commonly used format is 'account form' (as given below) where sources are shown on the left side and the application of funds on right side of the statement.

Statement of Sources and Application of Funds

Sources	(₹)	*Applications*	(₹)
Issue of shares	xx	Redemption of shares	xx
Issue of debentures	xx	Redemption of debentures	xx
Sale of fixed assets	xx	Purchase of fixed assets	xx
Sale of long-term investments	xx	Repayment of loans	xx
Bank loans	xx	Purchase of investments	xx
Long-term loans	xx	Operational loss	xx
Operational profit	xx	Increase in working capital (as per schedule of change in WC)	xx
Decrease in working capital (as per schedule of changes in WC)	xx		
	xx		xx

Funds from Operation/Operational Profit

The main source of fund for an enterprise is the *funds from operation* that represents actual amount of profit as generated by the business. For the funds flow statement,

the net profit as disclosed by profit and loss account is adjusted in order to calculate the actual amount of fund from operation. This is done to find the effect of the items such as depreciation and distribution of profits (general reserve, dividend, provision for taxation), loss from sale of asset, etc., on net profit which actually do not result in the outflow of fund but were treated so in the preparation of profit and loss account of the firm. In the same way, the impact of items like dividend received on investment, capital gains, etc., which do not represent income (inflow) from business operation, must be treated properly. The procedure for adjusting profits as disclosed by profits and loss account in order to ascertain funds from operation is as under:

	(₹)	(₹)
Net profits as per profit and loss account		
Add: Items which do not result in the outflow of fund:		xxx
• Depreciation charged during the year	xxx	
• Loss on sale of fixed assets/investments	xxx	
• Capital expenditure (like goodwill, preliminary expenses, patents) written off against profit and loss account	xxx	
• Provision for income tax/proposed dividend	xxx	
• Any other item	xxx	xxx
Less: Items which do not result in the inflow of funds:		
• Gains on sale of fixed assets/investment	xxx	
• Dividend received on investment (credited to profit and loss account)	xxx	
• Any other item	xxx	xxx
Profit from business operation or fund from operation		xxxx

Adjustment of Typical Items

Before attempting a practical problem, we must be familiar with the treatment of some typical transactions. Accordingly, the discussion that follows deals with adjustment procedure of typical transactions in fund flow analysis.

- Provision for Taxation There are two approaches to adjust the item of provision for taxation, viz.,
  - *As a current item* Under this approach, the item of provision for taxation is treated as current liability and accordingly it is adjusted in the schedule of changes in the working capital. However, while attempting a practical problem on fund flow analysis, the item of tax (if any) given outside the trial balance should be omitted under this approach. The logic behind the omission is that such an adjustment item (actual payment of tax) will affect two current accounts, *i.e.*, cash and provision for taxation. Therefore, the transaction will not result in the flow of fund (application).

- *As a non-current item* Under this approach, it is considered as an appropriation of profits and thus a non-current liability. Accordingly, the amount of current provision for taxation is to be adjusted in the funds from operation and the actual payment of tax appears in the funds flow statement as an application.

  Note: Students may note that it is desirable to treat the item of provision for taxation as current liability as generally it is the immediate obligation of the concern to pay tax to the government. As such, it seems somewhat irrational to treat provision of tax as an appropriation of profit.

- **Proposed Dividend** It has the same treatment as that of provision for taxation.
- **Interim Dividend** It is the dividend paid in between two balance sheet dates. It is a non-operating item and as such is adjusted in the calculation of profits from operation.
- **Depreciation** The depreciation is a non-fund item that does not result in the flow of cash. It involves simply a book entry without actual payment of cash. This entry in the book account which debits profit and loss account and credits the fixed asset account, reduces the amount of profit and the book value of the fixed assets. As such, depreciation does not affect the amount of fund (working capital). Thus, the amount of depreciation is adjusted in the computation of profits from operation.
- **Preliminary Expenses** Preliminary expenses like depreciation is a non-fund item which simply involves a book entry. Every year a portion of such expenses is written off by debiting them to profit and loss account. However, this treatment to preliminary expenses neither results in the flow of fund nor it is considered as an operating charge. Thus, the amount of preliminary expenses written off during the current period is to be added back to the net profit as to determine funds from operation.
- **Goodwill** The amount of goodwill written off does not involve flow of funds but requires simply book entry—debited to the profit and loss account. Therefore, while computing the funds from operations, the amount of goodwill written off during the current period is added back to the net profits for the year.
- **Creation of the Reserves** Since reserves are created out of profits, therefore, such reserves constitute an appropriation of profit and not an operating charge against profits. Further, the creation of reserve does not affect the amount of fund. Therefore, the current amount of the reserve is to be added back to the net profit to determine funds from operation.
- **Gain or Loss from the Sale of a Fixed asset** Firms often transfer gain or loss from the sale of asset to profit and loss account. The treatment of this item in the funds flow analysis is that it is to be adjusted in the

computation of funds from operation, this being a non-funds item. Thus, the gain from the sale of the asset is deducted from the net profit and vice-versa to determine profits from operation.

NOTES

Preparation of Working Accounts and Notes (Hidden Transaction)

Preparation of working accounts and notes is an important step in the funds flow statement. The need for such accounts and notices arises to find out some hidden information required for the funds flow statement. The information like depreciation, provision for taxation, sale or purchase of assets etc. is made available by this step. The following illustration will help in the clear understanding of this attempt.

Example The information relating to X Co. Ltd. regarding a machinery stands as:

	31st Dec. (2011)	31st Dec. (2012)
	(₹)	(₹)
Value of Machinery	1,00,000	2,25,000
Depreciation on machinery during the year 2012		30,000

Calculate the actual amount of application used for the purchase of machinery during the year 2012.

Solution Apparently it looks that the amount of application for the purchase of machinery during the year 2012 is ₹ 1,25,000 (2,25,000 – 1,00,000). But actually it is ₹ 1,55,000 (1,25,000 + 30,000). The value of machinery as on 31st December, 2012 (2,25,000) is the adjusted amount from which the amount of depreciation has already been deducted. In order to calculate the actual amount of application for the purchase of machinery, the amount of depreciation should be added back to the value of machinery. Thus, actual amount will be:

	(₹)
Value of machinery as on 31st December, 2012	2,25,000
Add: Depreciation charged during the year	30,000
	2,55,000
Less: Value of machinery as on 31st December, 2011	1,00,000
Value of machinery purchased during the year (Application)	1,55,000

The value of machinery purchased during the year 2012 can also be ascertained with the help of an account stated as follows:

Machinery Account

Particulars	(₹)	*Particulars*	(₹)
To Balance b/d	1,00,000	By depreciation	30,000
To Cash-purchases (balancing figure)	1,55,000	By Balance c/d	2,25,000
	2,55,000		2,55,000

In the above account, entries regarding opening and closing balances, depreciation, profit or loss from sale of machinery, profit or loss on revaluation etc. are to be recorded. The balancing figure in the account will represent either sale proceeds or acquisition cost of the machinery.

In the same way, ledger accounts may be prepared to find out inflow/ outflow of funds from other non-current assets and liabilities like investment account, building account, capital account, debentures account etc.

8.4 PROBLEMS AND SOLUTIONS

Now that you have learnt the theory about fund flow statement, let's apply it to practical problems.

Problem 8.1

Balance Sheet of Self Ridges Ltd.

Liabilities	*31st Dec. 2011* (₹)	*31st Dec. 2012* (₹)	*Assets*	*31st Dec. 2011* (₹)	*31st Dec. 2012* (₹)
Share capital	2,00,000	2,30,000	Plant and machinery	1,90,000	2,10,000
Trade creditors	80,000	1,00,000	Building	1,05,000	1,37,000
Bank loan	40,000	25,000	Inventory	20,000	27,000
Mortgage	–	25,000	Trade debtors	40,000	55,000
Profit & Loss A/c	65,000	83,000			
Cash	30,000	34,000			
	3,85,000	4,63,000		3,85,000	4,63,000

Prepare from the above comparative balance sheet:

(a) A schedule of change in working capital; and

(b) Funds flow statement.

Solution

Schedule of Changes in Working Capital

Items			*Effect on Working Capital*	
	2011 (₹)	*2012* (₹)	*Increase* (+) (₹)	*Decrease* (–) (₹)
A. *Current Assets:*				
Trade debtors	40,000	55,000	15,000	
Inventory	20,000	27,000	7,000	
Cash	30,000	34,000	4,000	
Total Current Asset (A)	90,000	1,16,000		
B. *Current Liabilities:*				
Trade creditors	80,000	1,00,000		20,000
Total Current Liabilities (B)	80,000	1,00,000		
Working Capital (A – B)	10,000	16,000		
Increase in working capital	6,000			6,000
	16,000	16,000	26,000	26,000

Working Note:

The increase in working capital is ascertained by subtracting working capital of 2011 from the working capital of 2012. The working capital for 2011 and 2012 is calculated as under:

NOTES

Working capital as on 31st December, 2011:

= Total Current Assets – Total Current Liabilities
(as on 31st Dec., 2011) (as on 31st Dec., 2011)

= ₹ 90,000 – ₹ 80,000 = ₹ 10,000

Working capital as on 31st December, 2012:

= Total Current Assets – Total Current Liabilities
(as on 31st Dec., 2012) (as on 31st Dec., 2012)

= ₹ 1,16,000 – ₹ 1,00,000 = ₹ 16,000

Therefore, increase in working capital = Working capital as on 31st Dec., 2012 – Working capital as on 31st Dec., 2011

= ₹ 16,000 – ₹ 10,000 = ₹ 6,000

Funds Flow Statement

Sources	*Amount (₹)*	*Applications*	*Amount (₹)*
Share capital (2,30,000 – 2,00,000)	30,000	Plant and machinery (2,10,000 – 1,90,000)	20,000
Mortgage	25,000	Building (1,37,000 – 1,05,000)	32,000
Profits/Funds from operation (83,000 – 65,000)	18,000	Bank loan (40,000 – 25,000)	15,000
		Increase in working capital	6,000
	73,000		73,000

Note: In the above illustration, working accounts and notes have not been prepared as there is no adjustment item. Now, in the next few illustrations we will study the adjustment of typical items and also the preparation of working accounts.

Problem 8.2: From the following balance sheets of Oriental Company Ltd., prepare (a) schedule of changes in working capital, and (b) Funds flow statement.

Liabilities	*31st Dec. 2009 (₹)*	*31st Dec. 2010 (₹)*	*Assets*	*31st Dec. 2009 (₹)*	*31st Dec. 2010 (₹)*
Capital	1,20,000	1,50,000	Plant	1,00,000	1,25,000
Sundry creditors	37,000	25,000	Land and building	75,000	90,000
Bills payable	15,000	17,000	Patents rights	7,000	9,500
Profit & Loss A/c	60,000	69,000	Cash	17,000	23,000
			Sundry debtors	33,000	13,500
	2,32,000	2,61,000		2,32,000	2,61,000

Additional Information:

Depreciation of ₹ 20,000 and ₹ 25,000 have been charged on plant, land and building respectively in 2010.

Solution

NOTES

Statement of Changes in Working Capital

Items	*2009* (₹)	*2010* (₹)	*Effect on Working Capital (₹)* Increase (+)	Decrease (–)
A. *Current Assets:*				
Cash	17,000	23,000	6,000	
Sundry debtors	33,000	13,500		19,500
Total Current Asset (A)	50,000	36,500		
B. *Current Liabilities:*				
Sundry creditors	37,000	25,000	12,000	
Bills payable	15,000	17,000		2,000
Total Current Liabilities (B)	52,000	42,000		
Working Capital (A – B)	(–) 2,000	(–) 5,500		
Decrease in working capital	(–) 3,500		3,500	
	(–) 5,500	(–) 5,500	21,500	21,500

Funds Flow Statement

Sources	*Amount* (₹)	*Applications*	*Amount* (₹)
Capital	30,000	Purchase of plant[2]	45,000
Funds from operations[1]	54,000	Purchase of land and building[3]	40,000
Decrease in working capital	3,500	Purchase of patents	2,500
	87,500		87,500

Working Notes:

		(₹)	(₹)
1.	Calculation of funds from operation:		
	Profit as per P&L A/c (closing balance)		69,000
	Add: Depreciation	20,000	
	Plant	25,000	45,000
	Land and building		1,14,000
	Less: Opening balance of profit		60,000
	Funds from operation		54,000

2. Calculation of plant purchased during the year:

Plant Account

	₹		₹
To Balance b/d	1,00,000	By Depreciation	20,000
To Cash—purchase (Balancing figure)	45,000	By Balance c/d	1,25,000
	1,45,000		1,45,000

3. Calculation of land and building purchases during the year:

NOTES

Land and Building Account

	₹		₹
To Balance b/d	75,000	By Depreciation	25,000
To Cash—purchase (Balancing figure)	40,000	By Balance c/d	90,000
	1,15,000		1,15,000

Problem 8.3 From the following balance sheets of MAS Ltd. prepare:

(i) Statement of change in working capital (ii) Fund flow statement

MAS Ltd.
(Balance Sheet)

Liabilities	*I Year* (₹)	*II Year* (₹)	*Assets*	*I Year* (₹)	*II Year* (₹)
Share Capital:					
Equity shares	4,50,000	6,00,000	Goodwill	1,90,000	1,40,000
6% Redeemable pref. shares	2,25,000	1,50,000	Plant	1,60,000	2,50,000
Profit & Loss A/c	60,000	75,000	Building	2,40,000	1,95,000
Proposed dividend	55,000	67,000	Inventories	92,000	1,25,000
Trade creditors	72,000	90,000	Trade Debtors	1,75,000	2,35,000
Bill payable	32,000	25,000	Bill receivables	45,000	57,000
Provision for taxation	60,000	72,000	Cash	52,000	77,000
	9,54,000	10,79,000		9,54,000	10,79,000

Additional Information:

1. An interim dividend of ₹ 35,000 has been paid in II year.
2. Payment of income-tax ₹ 52,000 was paid during II year.
3. Depreciation of ₹ 35,000 and ₹ 42,000 have been charged on plant and building respectively in II year.

Solution

Schedule of Changes in Working Capital

Items	*I Year* (₹)	*II Year* (₹)	*Effect on Working Capital* *Increase* (+) (₹)	*Decrease* (–) (₹)
A. *Current Assets:*				
Inventories	92,000	1,25,000	33,000	
Trade debtors	1,75,000	2,35,000	60,000	
Bills receivables	45,000	57,000	12,000	
Cash	52,000	77,000	25,000	
Total Current Asset (A)	3,64,000	4,94,000		
B. *Current Liabilities:*				
Proposed dividend	55,000	67,000		12,000
Trade creditors	72,000	90,000		18,000
Bills payable	32,000	25,000	7,000	
Provision for taxation	60,000	72,000		12,000
Total Current Liabilities (B)	2,19,000	2,54,000		
Working Capital (A – B)	1,45,000	2,40,000		
Increase in working capital	95,000			95,000
	2,40,000	2,40,000	1,37,000	1,37,000

NOTES

Funds Flow Statement

Sources	(₹)	Applications	(₹)
Issue of equity share	1,50,000	Redemption of pref. share capital	75,000
Sale of building[1]	3,000	Purchase of plant[3]	1,25,000
Funds from operation[2]	1,77,000	Interim dividend	35,000
		Increase in working capital	95,000
	3,30,000		3,30,000

Working Notes:

1. *Calculation of building sold during II year:*

Building Account

	(₹)		(₹)
To Balance b/d	2,40,000	By Depreciation	42,000
		By Balance c/d	1,95,000
		To Cash-sale (Balancing figure)	3,000
	2,40,000		2,40,000

2. *Calculation of funds from operation:*

		(₹)	(₹)
Profit as given (II year – I year) (75,000 – 60,000)			15,000
Add: Non-operating items:			
Depreciation on:			
Plant	35,000		
Building	42,000	77,000	
Goodwill (written off) (1,90,000 – 1,40,000)		50,000	
Interim dividend		35,000	1,62,000
Funds Flow Operation			1,77,000

3. *Calculation of plant purchase during II year:*

Plant Account

	(₹)		(₹)
To Balance b/d	1,60,000	By Depreciation	35,000
To Cash—purchase (Balancing figure)	1,25,000	By Balance c/d	2,50,000
	2,85,000		2,85,000

Note: The adjustment items (additional information) relating to provision for taxation and proposed dividend have been omitted because of being treated these iteme as current liabilities.

Alternatively, if these items are treated as non-current liabilities then:

(i) The current provison of such items will be added to profits in the calculation of funds from operation.

(ii) Actual payment on these accounts during the current year will appear in the funds flow statement as application. However, under this alternative

NOTES

these items will not be shown in the schedule of change in working capital and as a result, the working capital will increase by ₹ 24,000 (12,000 + 12,000). Now the practical solution of this problem will take the following form.

Schedule of Changes in Working Capital

Items	*I Year* (₹)	*II Year* (₹)	*Effect on Working Capital*	
			Increase (+) (₹)	*Decrease* (–) (₹)
A. *Current Assets:*				
Inventories	92,000	1,25,000	33,000	
Trade debtors	1,75,000	2,35,000	60,000	
Bills receivables	45,000	57,000	12,000	
Cash	52,000	77,000	25,000	
Total Current Asset (A)	3,64,000	4,94,000		
B. *Current Liabilities:*				
Trade creditors	72,000	90,000		18,000
Bills payable	32,000	25,000	7,000	
Total Current liabilities (B)	1,04,000	1,15,000		
Working Capital (A – B)	2,60,000	3,79,000		
Increase in working capital	1,19,000			1,19,000
	3,79,000	3,79,000	1,37,000	1,37,000

Funds Flow Statement

Sources	*Amount* (₹)	*Applications*	*Amount* (₹)
Issue of equity share	1,50,000	Redemption of pref. share capital	75,000
Sale of building	3,000	Purchase of plant[2]	1,25,000
Profits from operation[1]	3,08,000	Interim dividend	35,000
		Payment of proposed dividend[3] (Ist Year)	55,000
		Payment of Income Tax[4]	52,000
		Increase in working capital	1,19,000
	4,61,000		4,61,000

Working Accounts and Notes (For alternative method) (₹)

1. Computation of Funds from Operation

Profit as given (II year – I year) (75,000 – 60,000)			15,000
Add: Non-operating items:			
Depreciation:			
Plant	35,000		
Building	42,000	77,000	
Provision for taxation[4]		64,000	
Proposed dividend		67,000	
Interim dividend		35,000	
Goodwill (written off)		50,000	2,93,000
Funds Flow Operation			3,08,000

NOTES

2. Calculation of the building sold during the year—same as in the first alternative.
3. It has been assumed that the provisioin for dividend made in first year is paid in second year.
4. **Provision for Taxation A/c**

	(₹)		(₹)
To Bank (Paid)	52,000	By Bal. b/d	60,000
To Balance c/d	72,000	By P&L A/c	64,000
		Being provision made during the year (Balancing figures)	
	1,24,000		1,24,000

Problem 8.4 The following comparative balance sheet of Super Max Ltd. for 2009 and 2010 are available:

Liabilities	*2009* (₹)	*2010* (₹)	*Assets*	*2009* (₹)	*2010* (₹)
Equity share capital	9,00,000	10,50,000	Fixed assets	15,30,000	18,60,000
8% Preference share capital	6,00,000	3,00,000	Investment	90,000	2,40,000
Debentures	3,00,000	6,00,000	Current assets	7,20,000	11,25,000
Profit and loss account	3,30,000	8,10,000	Discount on debentures	30,000	15,000
Current liabilities	2,40,000	4,80,000			
	23,70,000	32,40,000		23,70,000	32,40,000

Additional Information:

(a) A machine costing ₹ 1,20,000 was sold for ₹ 75,000.

(b) A redemption at a premium of 15% was done for preference shares on 31st December, 2010.

(c) Equity shares were paid a divided at 15% for 2009; and

(d) Depreciation was charged on fixed assets during the year was ₹ 1,80,000.

You are required to prepare statement showing the sources and application of funds for the year ended 31st December, 2010.

Solution

Projected Funds Flow Statement

Sources	(₹)	*Applications*	(₹)
Equity share capital	1,50,000	Redemption of pref. share capital including premium[2] (3,00,000 + 45,000)	3,45,000
Debentures	3,00,000		
Sale of fixed asset[4]	75,000		
Funds from operation[1]	9,48,000	Purchase of fixed asset	6,30,000
		Payment of preference dividend[3]	48,000
		Payment of eq. dividend	1,35,000
		Investment acquired	1,50,000
		Increase in working capital	1,65,000
	14,73,000		14,73,000

NOTES

Working Notes:

1. **Calculation of Funds from Operation**

Profit as per P&L A/c for 2009 (8,10,000 – 3,30,000)		4,80,000
Add: non-fund/non-operating items appearing in P&L A/c:		
Loss on sale of machine	45,000	
Premium on pref. shares redeemed	45,000	
Preference dividend	48,000	
Equity dividend	1,35,000	
Depreciation	1,80,000	
Discount on debentures written off	15,000	4,68,000
Funds flow operation		9,48,000

2. Calculation of premium on prefrence shares:

$$= \frac{\text{Rate}}{100} \times \text{Amount to be redeemed} = \frac{15}{100} \times 3{,}00{,}000 = ₹\,45{,}000$$

3. Calculation of dividend: It is assumed that preference dividend was also paid as equity dividend cannot be declared without declaration of pref. dividend. Preference dividend $= \frac{8}{100} \times 6{,}00{,}000 = ₹\,48{,}000$

   Equity dividend $= \frac{15}{100} \times 9{,}00{,}000 = ₹\,1{,}35{,}000$

4. **Fixed Asset Account**

	(₹)		(₹)
To Balance b/d	15,30,000	By Depreciation	1,80,000
To Cash—purchase (Balancing figures)	6,30,000	By Sale	75,000
		By P&L A/c - (loss from sale of asset)	45,000
		By Balance c/d	18,60,000
	21,60,000		21,60,000

Problem 8.5 From the following balance sheet of X Ltd., you are required to prepare:

(i) Statement of changes in the working capital; and

(ii) Funds flow statement

Liabilities	*Year I* (₹)	*Year II* (₹)	*Assets*	*Year I* (₹)	*Year II* (₹)
Equity share capital	1,20,000	1,60,000	Building	1,18,000	1,90,000
Share premium	20,000	22,000	Machinery	40,000	80,000
Reserves	14,000	16,400	Furniture	6,000	3,000
8% Debentures	–	60,000	Inventories	20,000	30,000
Corporation taxes	20,000	28,000	Sundry debtors	80,000	84,000
Sundry creditors	70,000	84,000	Cash	16,000	29,400
Profit and Loss account	36,000	46,000			
	2,80,000	4,16,400		2,80,000	4,16,400

During the year machinery was written off by ₹ 30,000 and furniture by ₹ 2,000.

Solution

NOTES

Schedule of Changes in Working Capital

Particulars	*I Year* (₹)	*II Year* (₹)	*Effect on Working Capital*	
			Increase (+) (₹)	*Decrease* (–) (₹)
A. *Current Assets:*				
Inventories	20,000	30,000	10,000	
Sundry debtors	80,000	84,000	4,000	
Cash	16,000	29,400	13,400	
Total Current Asset (A)	1,16,000	1,43,400		
B. *Current Liabilities:*				
Corporation taxes	20,000	28,000		8,000
Trade creditors	70,000	84,000		14,000
Total Current Liabilities (B)	90,000	1,12,000		
Working Capital (A–B)	26,000	31,400		
Net increase in working capital	5,400			5,400
	31,400	31,400	27,400	27,400

Projected Funds Flow Statement

Sources	(₹)	*Application*	(₹)
Issue of equity share	40,000	Building[1]	72,000
Share premium	2,000	Machinery[2]	70,000
8% Debentures	60,000	Net increase in working capital	5,400
Sale of furniture[3]	1,000		
Profits From operation[4]	44,400		
	1,47,400		1,47,400

Working Notes:

1. **Building Account**

To Balance b/d	1,18,000	By Balance c/d	1,90,000
To Purchase (balancing figure)	72,000		
	1,90,000		1,90,000

2. **Machinery Account**

To Balance b/d	40,000	By Balance c/d	80,000
To Cash—purchase (balancing figure)	70,000	By Depreciation	30,000
	1,10,000		1,10,000

NOTES

3. **Furniture Account**

To Balance b/d	6,000	By Balance c/d	3,000
		By Depreciation	2,000
		By Cash sale (balancing figure)	1,000
	6,000		6,000

4. **Calculation of Funds from Operation**

Profit for II year as per P&L A/c (46,000 – 36,000)			10,000
Add non-fund/non-operating items appearing in P&L App. A/c:			
Reserves		2,400	
Depreciation:			
Machinery	30,000		
Furniture	2,000	32,000	34,400
Profit/Funds Flow Operation			44,400

Problem 8.6 From the following balance sheet of M/s Western Company Ltd., as on 31st December, 2007 and 2008, you are required to prepare:

(a) Fund Flow Statement; and

(b) Schedule of changes in working capital.

Liabilities	*2007* (₹)	*2008* (₹)	*Assets*	*2007* (₹)	*2008* (₹)
Share capital	3,50,000	4,35,000	Building	3,00,000	3,40,000
Debentures	2,25,000	3,20,000	Plant	3,25,000	3,75,000
General reserves	1,20,000	1,75,000	Investment	1,65,000	1,85,000
Profit and Loss account	75,000	95,000	Preliminary expenses	9,000	–
Depreciation reserve	90,000	1,35,000	Inventories	75,000	1,45,000
Sundry creditors	75,000	95,000	Sundry debtors	95,000	1,75,000
Bills payable	90,000	1,10,000	Bills receivable	40,000	65,000
			Cash in hand	16,000	80,000
	10,25,000	13,65,000		10,25,000	13,65,000

Additional Information:

(i) Dividend for 2007 @ 15% was paid during the year 2008;

(ii) A plant costing ₹ 75,000 (Depreciation provided ₹ 25,000) was sold for ₹ 55,000;

(iii) Investment amounting to ₹ 40,000 were realised for ₹ 32,000.

Solution

Schedule of Changes in Working Capital

Particulars			*Effect on Working Capital* (₹)	
	2007 (₹)	*2008* (₹)	*Increase* (+)	*Decrease* (–)
A. *Current Assets:*				
Inventories	75,000	1,45,000	70,000	
Sundry debtors	95,000	1,75,000	80,000	
Bills receivable	40,000	65,000	25,000	
Cash in hand	16,000	80,000	64,000	
Total Current Asset (A)	2,26,000	4,65,000		
B. *Current Liabilities:*				
Sundry creditors	75,000	95,000		20,000
Bills payable	90,000	1,10,000		20,000
Total Current liabilities (B)	1,65,000	2,05,000		
Working Capital (A – B)	61,000	2,60,000		
Net increase in working capital	1,99,000			1,99,000
	2,60,000	2,60,000	2,39,000	2,39,000

Projected Funds Flow Statement

Sources	(₹)	*Applications*	(₹)
Issue of capital	85,000	Purchase of plant	1,25,000
Issue of debentures	95,000	Purchase of building[1]	40,000
Sale of plant[2]	55,000	Purchase of investment[3]	60,000
Sale of investment	32,000	Payment of dividend	52,500
Profits from operation[4]	2,09,500	Net increase in working capital	1,99,000
	4,76,500		4,76,500

Working Notes:

1. **Building Account**

To Balance b/d	3,00,000	By Balance c/d	3,40,000
To Cash—Purchase (balancing figure)	40,000		
	3,40,000		3,40,000

2. **Plant Account**

To balance b/d	3,20,000	By Depreciation on the plant sold	25,000
To P&L account gain*	5,000	By Sale	55,000
To Cash—purchases (balancing figures)	1,25,000	By Balance c/d	3,75,000
	4,55,000		4,55,000

NOTES

**Calculation of gain from sale of plant:*

Cost of plant sold	75,000
Less: Depreciation charges	25,000
Written down value	50,000
Sale proceeding	55,000
Gain (Sale – WDV) (55,000 – 50,000)	5,000

3. **Investment Account**

	(₹)		(₹)
To Balance b/d	1,65,000	By Balance c/d	
To Cash—purchase	60,000	(40,000 – 32,000)	8,000
(balancing figure)		By Sale	32,000
		By Balance c/d	1,85,000
	2,25,000		2,25,000

4. **Calculation of Funds from Operation** ₹

Current year's profit as per P&L A/c (95,000 – 75,000)		20,000
Add: Non-funds/non-operation items debited to P&L App. A/c:		
Depreciation reserve	45,000	
Depreciation charged	25,000	
Loss on sale of investment	8,000	
Preliminary expenses	9,000	
General reserve	55,000	
Dividend paid (15/100 × 3,50,000)	52,000	1,94,500
Total		2,14,500
Less: Non-operating expenses already credited to P&L A/c:		
Gain on sale of plant		5,000
Profit/Funds from operation		2,09,500

Problem 8.7 The balance sheet of Double Company Ltd. at the end of 2008 and 2009 are given below:

Liabilities	*2008* (₹)	*2009* (₹)	*Assets*	*2008* (₹)	*2009* (₹)
Capital	10,00,000	12,00,000	Cash	3,00,000	3,80,000
Trade creditors	2,80,000	2,60,000	Trade debtors	3,30,000	2,00,000
Bill payable	80,000	60,000	Inventories	3,00,000	2,00,000
Bank overdraft	1,00,000	–	Prepaid expenses	8,000	6,000
Provision for tax	1,50,000	1,30,000	Fixed assets	10,00,000	9,60,000
General reserve	1,60,000	1,60,000	Goodwill	–	1,20,000
Profit and Loss account	1,68,000	56,000			
	19,38,000	18,66,000		19,38,000	18,66,000

Additional Information:

(i) A dividend of ₹ 68,000 was paid in 2009;

(ii) Asset of another company were purchased at ₹ 2,00,000 payable in 10,000 shares of ₹ 20 each. The assets included stock of ₹ 20,000; fixed assets ₹ 60,000, and goodwill ₹ 1,20,000;

(iii) Income tax paid in 2009 was ₹ 20,000;

(iv) Net profit in 2009 was ₹ 76,000 before charging tax;

Prepare a statement showing sources and uses of funds during 2009.

NOTES

Solution

Schedule of Changes in Working Capital

Particulars	*2008* (₹)	*2009* (₹)	*Effect on Working Capital* *Increase* (+) (₹)	*Decrease* (–) (₹)
A. *Current Assets:*				
Cash	3,00,000	3,80,000	80,000	
Trade debtors	3,30,000	2,00,000		1,30,000
Inventories	3,00,000	2,00,000		1,00,000
Prepaid expense	8,000	6,000		2,000
Total Current Asset (A)	9,38,000	7,86,000		
B. *Current Liabilities:*				
Trade creditors	2,80,000	2,60,000	20,000	
Bills payable	80,000	60,000	20,000	
Bank overdraft	1,00,000	–	1,00,000	
Provision for taxation	1,50,000	1,30,000	20,000	
Total Current Liabilities (B)	6,10,000	4,50,000		
Working Capital (A – B)	3,28,000	3,36,000		
Net increase in working capital	8,000			8,000
	3,36,000	3,36,000	2,40,000	2,40,000

Funds Flow Statement

Sources	(₹)	*Applications*	(₹)
Funds from operation	56,000	Payment of dividend	68,000
Issue of shares	20,000*	Net increase in working capital	8,000
	76,000		76,000

NOTES

Working Notes:

I. **Fixed Assets Account**

	(₹)		(₹)
To Balance b/d	10,00,000	By Balance c/d	9,60,000
To Share capital	60,000	By Depreciation	1,00,000
		(balancing figure)	
	10,60,000		10,60,000

Note: The increase in fixed asset of ₹ 60,000 due to share capital will not be deemed as application.

II. **Share Capital Account**

	(₹)		(₹)
To Balance c/d	12,00,000	By Balance b/d	10,00,000
		By Stock (source)	20,000
		By Goodwill	1,20,000
		By Fixed assets	60,000
	12,00,000		12,00,000

III. **Calculation of Funds from Operation**

		₹
Net profit for 2009 (1,68,000 – 56,000)		(–)1,12,000
Add: Non-fund and non-operating items already debited to profit and loss account:		
Depreciaton of fixed assets(I)	1,00,000	
Dividend	68,000	
		(+)1,68,000
Funds from operation		56,000

Problem 8.8 From the following balance sheets as on 31st December, 2009 and 2010, prepare a funds statement:

Liabilities	*2009* (₹)	*2010* (₹)	*Assets*	*2009* (₹)	*2010* (₹)
Share capital	5,00,000	5,04,000	Machinery	3,50,000	3,60,000
8% Debentures	2,00,000	2,40,000	Land and building	2,00,000	2,50,000
Profit and loss account	1,50,000	2,52,000	Sundry debtors	1,47,000	1,38,000
Sundry creditors	1,20,000	1,05,000	Stock	2,50,000	2,74,000
Depreciation reserve:			Cash	83,000	1,45,000
Machinery	30,000	32,000	Preliminary expenses	5,000	4,000
Land and building	30,000	34,000			
Provision for doubtful debts	5,000	4,000			
	10,35,000	11,71,000		10,35,000	11,71,000

NOTES

During the year 2010, Machinery costing ₹ 7,000 (accumulated depreciation thereon ₹ 1000) was sold for ₹ 5,000. Further dividend of ₹ 50,000 was paid during the year ending 31st December, 2010.

Prepare statements to show the change in working capital for the year 2010 and the source and application of funds for 2010.

Solution

Schedule of Changes in Working Capital

Particulars	*2009* (₹)	*2010* (₹)	*Effect on Working Capital* *Increase* (+) (₹)	*Decrease* (–) (₹)
A. *Current Assets:*				
Sundry debtors	1,47,000	1,38,000		9,000
Stock	2,50,000	2,74,000	24,000	
Cash	83,000	1,45,000	62,000	
Total Current Asset (A)	4,80,000	5,57,000		
B. *Current Liabilities:*				
Sundry creditors	1,20,000	1,05,000	15,000	
Provision for doubtful debts	5,000	4,000	1,000	
Total Current Liabilities (B)	1,25,000	1,09,000		
Working Capital (A – B)	3,55,000	4,48,000		
Net increase in working capital	93,000			93,000
	4,48,000	4,48,000	1,02,000	1,02,000

Funds Flow Statement

Sources	(₹)	*Applications*	(₹)
To Capital issue	4,000	By Purchase of machinery[1]	17,000
To Issue of 8% debentures	40,000	By Purchase of land and building	50,000
To Sale of plant[2]	5,000	By Payment of dividend	50,000
To Fund from operation[4]	1,61,000	By Increase in net working capital	93,000
	2,10,000		2,10,000

Working Notes:

1. **Machinery Account**

	(₹)		(₹)
To Balance b/d	3,50,000	By Balance c/d	3,60,000
To Cash—purchases (balancing figure)	17,000	By Sale (at cost)	7,000
	3,67,000		3,67,000

2. **Machinery Sale Account**

	(₹)		(₹)
To Cost price	7,000	By Depreciation (accumulated)	1,000
		By Cash	5,000
		By Loss (transferred to P&L account)	1,000
	7,000		7,000

NOTES

3. **Depreciation (Machinery)**

	(₹)		(₹)
To Machinery sold account (accumulated depreciation transferred on sale)	1,000	By Balance b/d	30,000
To Balance c/d	32,000	By Profit and loss (current provisions made during the year) (balancing figure)	3,000
	33,000		33,000

4. **Calculation of Funds from Operation**

			₹
Profit made during 2010 as per P&L account (2,52,000 – 1,50,000)			1,02,000
Add: Non-fund and non-operating items already debited to profit and loss account:			
Loss on sale of machinery		1,000	
Depreciation:			
Machinery[3]	3,000		
Land and Building (34,000 – 30,000)	4,000	7,000	
Preliminary expenses		1,000	
Dividend		50,000	59,000
Funds from operation			1,61,000

Problem 8.9 From the following comparative balance sheets and additional information relating to GMT Ltd., prepare:

(i) Schedule of changes in working capital, and

(ii) Fund Flow Statement for the year ending 31st December, 2010

Balance Sheet

Liabilities	*2009* (₹) *(000's)*	*2010* (₹) *(000's)*	*Assets*	*2009* (₹) *(000's)*	*2010* (₹) *(000's)*
Share capital	591	690	Cash	390	135
General reserve	444	936	Work-in-progress	427	588
Bank loan (secured)	261	–	Trade debtors	272	420
Trade creditors	754	894	Prepaid expenses	43	63
Provision for taxation	195	516	Investments	33	30
			Fixed assets	1,080	1,800
	2,245	3,036		2,245	3,036

Additional Information:

1. Accumulated depreciation on fixed assets was ₹ 5,40,000 and ₹ 4,80,000 as on 31st December 2010 and 31st December, 2009 respectively.
2. Machinery costing 60,000 (accumulated depreciation thereon being ₹ 30,000) was discarded and written off during 2010.

3. . . . . ₹ 90,000
4. During the year 2010, investment costing ₹ 15,000 were sold for ₹ 14,000.
5. Government Securities of ₹ 12,000 (Face value) were purchased during the year 2010 for ₹ 11,250.
6. The balance in the General Reserve account on 31st December 2010 is arrived at as follows:

		₹
Balance (1-1-2010)		4,44,000
Net Profit for the year		5,95,000
	10,39,500	
Less: Dividend	1,03,500	9,36,000
		19,75,000

Solution

Schedule of Changes in Working Capital

Particulars	*2009* (₹) *(000's)*	*2010* (₹) *(000's)*	*Effect on Working Capital*	
			Increase (+) (₹)	*Decrease* (–) (₹)
A. *Current Assets:*				
Cash	390	135		255
Work-in-progress	427	588	161	
Trade debtors	272	420	148	
Prepaid expenses	43	63	20	
Total Current Asset (A)	1,132	1,206		
B. *Current Liabilities:*				
Trade creditors	754	894		140
Provision for taxation	195	516		321
Total Current Liabilities (B)	949	1410		
Working Capital (A – B)	183	(–)204		
Decrease in working capital		(+)387	387	
	183	183	716	716

Funds Flow Statement

Sources	(₹) *(000's)*	*Applications*	(₹) *(000's)*
Issue of shares	99	Purchase of fixed assets[I]	840
Sale of investment[III]	14	Purchase of government securities	11
Fund from operation[IV]	716	Payment of dividend	104
Decrease in working capital	387	Payment of bank loan	261
	1,216		1,216

NOTES

Working Notes:

I. **Fixed Assets Account**

	₹		₹
To Balance b/d (1,080 + 480)	1,560	By Provison for Dep. A/c (accumulated depreciation on discarded machine)	30
To Cash—purchases (balancing figure)	840	By Loss on machine discarded (transferred to P&L A/c	30
		By Bal. c/d (1,800 + 540)	2,340
	2,400		2,400

II. **Provision for Depreciation Account**

	₹		₹
To Fixed assets A/c	30	By Balance c/d	480
To Closing balance	540	By Current provision	90
	570		570

III. **Investment Account**

	₹		₹
To Balance b/d	33	By Balance c/d	30
To Cash—purchase	12	By Loss on sale (transferred to P&L A/c)	1
		By Sale	14
	45		45

IV. **Calculation of Funds form Operation**

		₹ *(000's)*
Net Profit for the year (given)		595
Add: Non-fund and non-operating items already debited to profit and loss account:		
Provision for depreciation	90	
Loss on sale of investment[III]	1	
Loss on machine discarded[I]	30	121
Funds from operation		716

Note: Friction has been ignored in the calculation.

Problem 8.10 From the following Balance Sheets of ABC Ltd., prepare Funds Flow statement.

NOTES

Balance Sheet

Liabilities	*2010* (₹)	*2011* (₹)	*Assets*	*2010* (₹)	*2011* (₹)
Equity share capital	3,00,000	4,00,000	Goodwill	1,15,000	90,000
Pref. shares	1,50,000	1,00,000	Land and Building	2,00,000	1,70,000
General reserve	40,000	70,000	Plant and Machinery	80,000	2,00,000
Profit & Loss A/c	30,000	48,000	Debtors	1,60,000	2,00,000
Proposed dividend	42,000	50,000	Stock	77,000	1,09,000
Creditors	55,000	83,000	Bills receivable	2,00,000	3,00,000
Bills payable	20,000	16,000	Cash in hand	15,000	10,000
Provision for taxation	40,000	50,000	Cash at bank	10,000	8,000
	6,77,000	8,17,000		6,77,000	8,17,000

Additional Information:

(a) Dividend provision made during 2010 has been paid during 2011.

(b) Depreciation:

₹ 10,000 on plant and machinery

₹ 20,000 on land and buildings.

(c) An interim dividend of ₹ 20,000 has been paid in 2011.

(d) Income tax ₹ 35,000 has been paid during 2011. (*ACS, Final, adapted*)

Solution

Schedule of Changes in Working Capital

Items	*2010* (₹)	*2011* (₹)	*Increase (+)* (₹)	*Decrease (–)* (₹)
A. *Current Assets:*				
Debtors	1,60,000	2,00,000	40,000	
Stock	77,000	1,09,000	32,000	
Bills receivable	20,000	30,000	10,000	
Cash in hand	15,000	10,000		5,000
Cash at bank	10,000	8,000		2,000
Total A	2,82,000	3,57,000		
B. *Current Liabilities:*				
Proposed dividend	42,000	50,000		8,000
Creditors	55,000	83,000		28,000
Bills payable	20,000	16,000	4,000	
Provision for taxation	40,000	50,000		10,000
Total B	1,57,000	1,99,000		
Working capital (A – B)	1,25,000	1,58,000		
Net increase in working capital	33,000			33,000
	1,58,000	1,58,000	86,000	86,000

NOTES

Funds Flow Statement

Sources	(₹)	*Applications*	(₹)
Issue of equity shares	1,00,000	Redemption of Pref. share capital	50,000
Sale of land and building[2]	10,000	Purchase of plant and machinery[1]	1,30,000
Funds from operation[3]	1,23,000	Interim dividend	20,000
		Increase in working capital	33,000
	2,33,000		2,33,000

Working Notes:

1. Calculation of Plant and Machinery purchased during 2011

Plant and Machinery A/c

	₹		₹
To Balance b/d	80,000	By Depreciation	10,000
To Cash-purchases (balancing figure)	1,30,000	By Balance c/d	2,00,000
	2,10,000		2,10,000

2. Calculation of land and building sold during 2011:

Land and Building A/c

	₹		₹
To Balance b/d	2,00,000	By Depreciation	20,000
		By Balance c/d	1,70,000
		By Cash—sale (balancing figure)	10,000
	2,00,000		2,00,000

3. Calculation of funds from operation:

			₹
Profit as given (2011 – 2010) (₹ 48,000 – ₹ 30,000)			18,000
Add: Non-operating items			
Depreciation:			
Plant and Machinery	10,000		
Land and Building	20,000	30,000	
Goodwill (written off) (1,15,000 – 90,000)		25,000	
Interim dividend		20,000	
Transfer to General reserve (70,000 – 40,000)		30,000	1,05,000
			1,23,000

***Note:** Adjustment items (additional information) relating to provision for taxation and proposed dividend have been omitted because of being treated them as current liabilities.

Check Your Progress

4. Give an example of non-fund item.
5. What effect does an increase in current liabilities have on the working capital?
6. Define funds from operation.
7. How is goodwill treated in the fund flow analysis?

NOTES

8.6 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. In the broader sense, fund represents the working capital (current assets and current liabilities) of a concern while in the narrow sense it represents only cash balances of a firm.
2. The changes which occur in the non-current accounts if a firm is reflected in the state of changes in financial position also known as funds flow statement.
3. Patents and deferred expenses fall under the category of fixed assets under the non-current accounts.
4. Depreciation on fixed assets is an example of non-fund item.
5. An increase in current liabilities results in a decrease in the working capital.
6. The fund from operation is the main source of fund for an enterprise that represents actual amount of profit as generated by the business.
7. While computing the funds from operations, the amount of goodwill written off during the current period is added back to the net profits for the year.

8.7 SUMMARY

- Statement of changes in financial position is a statement designed to describe the changes in the financial position of a concern during a particular period.
- Fund in a broader sense, represents the working capital (current assets – current liabilities) of a concern while as in narrow sense it represents only cash balances of a firm.
- Flow of fund would mean when a business transaction causes a change in the amount of fund (working capital) that exists before the maturity of the transaction.
- Funds Flow Statement is a technique used to summarize the financial operations of a concern by studying the sources and application funds during the accounting period.

NOTES

- Statement or Schedule of changes in working capital is a statement that compares the change in the amount of current accounts, current assets and current.
- Sources refer to a situation when a transaction increases the amount of fund (working capital).
- Application means a transaction that results in the reduction of fund.
- The dual-aspect concept of accounting suggests that the total amount of sources of funds must reconcile with the total amount of application of funds.

8.8 KEY WORDS

- **Flow of fund:** It refers to a business transaction that causes a change in the amount of fund that exists before the maturity of the transaction.
- **Fund flow statement:** It is a statement prepared on the basis of net current assets/working capital which is calculated by subtracting current liabilities from current assets.
- **Schedule of changes in the working capital:** It is a statement that compares the change in the amount of current accounts (current assets and current liabilities) on two balance sheet dates and highlights its impact on working capital.
- **Sources:** It refers to such business transactions that increase the amount of fund (working capital).
- **Applications:** It refers to such transactions that result in the reduction of fund.

8.9 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. Explain the terms:
   (i) Funds (ii) Flow of Funds (iii) Funds Flow Statement
2. Discuss the procedure for the preparation of Funds Flow Statement.
3. What information would you require to prepare a statement of sources and application?
4. Write short note on:
   (a) Non-operating items
   (b) Funds from operations
   (c) Current

NOTES

Long-Answer Questions

1. What is a Funds Flow Statement? Examine its managerial uses.
2. Examine the major sources and applications of working capital.
3. The comparative balance sheet of MAS Ltd., as on 31st December, 2008 and 2009 were as follows:

Assets	*2008* (₹)	*2009* (₹)	*Liabilities*	*2008* (₹)	*2009* (₹)
Building	5,00,000	5,10,000	Share capital	5,50,000	7,00,000
Furniture and fixtures	2,20,000	2,50,000	Debentures	3,00,000	3,15,000
Plant	3,00,000	3,40,000	Profit and Loss account	3,55,000	3,75,000
Stock	1,25,000	1,75,000	Bills payable	50,000	40,000
Bills receivables	60,000	90,000	Bank overdraft	30,000	20,000
Cash balance	80,000	85,000			
	12,85,000	14,50,000		12,85,000	14,50,000

You are given the following additional information:

(i) Depreciation on building and plant during the year were ₹ 20,000 and 10,000 respectively.

(ii) Dividend amounting to ₹ 10,000 was paid during 2009.

Prepare a funds flow statement and a statement of changes in working capital.

4. The summarized balance sheet of ESS BEE Enterprises on 31st of Dec. 2008 and 2009 are given below:

Balance Sheet of ESS BEE Enterprises

Liabilities	*2008* (₹)	*2009* (₹)	*Assets*	*2008* (₹)	*2009* (₹)
Trade creditors	85,000	60,000	Bank balance	1,00,000	1,00,000
Accounts payable	40,000	50,000	Trade debtors	80,000	1,00,000
Bank overdraft	15,000	17,000	Stock	70,000	60,000
Provision for income tax	60,000	80,000	Building	3,20,000	3,50,000
P & L A/c	2,20,000	2,70,000	Plant	3,50,000	4,20,000
Share capital	8,00,000	9,20,000	Investment	3,00,000	3,67,000
	12,20,000	13,97,000		12,20,000	13,97,000

The following additional information is obtained from the general ledger:

(i) Income-tax paid during the year amounting to ₹ 45,000

(ii) Depreciation charged to building and plant during the year was ₹ 40,000 and 35,000 respectively.

You are required to prepare:

(i) Schedule of charges in working capital, and

(ii) Funds flow statements.

5. The Balance Sheet of MS Ltd. as on 31st Dec. 2010 and 2011 are given below:

NOTES

Liabilities	2010 (₹)	2011 (₹)	Assets	2010 (₹)	2011 (₹)
Equity share capital	2,00,000	3,40,000	Plant	2,40,000	2,60,000
6% preference Share capital	2,50,000	3,20,000	Building	2,50,000	2,70,000
Reserves	40,000	45,000	Preliminary expenses	60,000	40,000
Provision for taxation	60,000	48,000	Inventories	65,000	73,000
Proposed dividend	90,000	90,000	Sundry debtors	70,000	96,000
Profit and loss A/c	1,00,000	—	Cash balances	1,50,000	1,45,000
Sundry creditors	70,000	75,000	Receivable	75,000	99,000
Bills payable	60,000	40,000			
Bank overdraft	40,000	25,000			
	9,10,000	9,83,000		9,10,000	9,83,000

Additional Information:

(i) Tax liability in respect of 2010 comes to ₹ 35,000.

(ii) During the year 2011 a plant costing ₹ 42,000 (accumulated depreciation ₹ 25,000) was sold for ₹ 20,000.

(iii) Actual dividend paid during the year 2011 amounted to ₹ 55,000.

Prepare

(i) Funds Flow statement; (ii) Schedule of changes in working capital.

6. The following are the summaries of the Balance Sheets of SBG Ltd. as at 31st December, 2009 and 31st December, 2010.

Liabilities	2010 (₹)	2011 (₹)	Assets	2010 (₹)	2011 (₹)
Equity share capital	2,00,000	3,40,000	Plant	2,40,000	2,60,000
6% preference Share capital	2,50,000	3,20,000	Building	2,50,000	2,70,000
Reserves	40,000	45,000	Preliminary expenses	60,000	40,000
Provision for taxation	60,000	48,000	Inventories	65,000	73,000
Proposed dividend	90,000	90,000	Sundry debtors	70,000	96,000
Profit and loss A/c	1,00,000	—	Cash balances	1,50,000	1,45,000
Sundry creditors	70,000	75,000	Receivable	75,000	99,000
Bills payable	60,000	40,000			
Bank overdraft	40,000	25,000			
	9,10,000	9,83,000		9,10,000	9,83,000

You are required to prepare fund flow statements.

8.10 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice*, 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management,* 4th edition. New Delhi: Vikas Publishing House.

UNIT 9 CASH FLOW ANALYSIS

NOTES

Structure

9.0 INTRODUCTION

Cash flow has rightly been recognized as life stream of a successful business as there is hardly any business transaction that does not involve cash. Many research studies have revealed that profitable ventures have failed because of insufficient cash and unprofitable ones have continued for long periods because sufficient cash was somewhat pumped into the business system. Consequently, management of cash has emerged as a strategic area for the growth and prosperity of firms in contemporary business, and therefore, has received considerable attention of both academicians and practitioners. Recognizing the significance of management of cash in contemporary business as a strategic resource, business firms need to control and monitor cash flows efficiently and effectively so that adequate cash is available to meet the requirements of the business. To attain this objective, business firms make use of *cash flow statement* which provides them the details about cash received and spent on various activities during the period under study.

9.1 OBJECTIVES

After going through this unit, you will be able to:

- Explain the nature and significance of cash flow statement
- Discuss the sources and application of cash
- Describe the forms of cash flow statement; and
- Identify the adjustments of typical items in the preparation of cash flow statement

9.2 MEANING, NEED, MANAGERIAL USES

In this section, we will learn about the meaning and uses of cash flow statement.

NOTES

Meaning

Cash flow statement attempts to measure the inflows and outflows of cash that result from various business activities during a particular accounting period. In cash flow analysis, attempts are made to explain the causes of change in the cash position of a concern during the period. Such an analysis help the business firms in identifying the areas of business that either have surplus or deficit cash and accordingly help them in the creation and utilization of cash effectively. Thus, cash flow statement is a tool that managers utilize to evaluate their ability to manage cash efficiently and effectively. Therefore, a cash flow statement focuses on cash rather than on working capital as advocated by a fund flow statement. The Institute of Cost and Works Accountants of India, 2000 defines cash flow statement as '*a statement setting out the flow of cash under distinct heads of sources of funds and their utilization to determine the requirements of cash during the given period and to prepare for its adequate provision*'.

As per author MA Sahaf, *a cash flow statement is a statement which provides a detailed explanation for the change in a firm's cash during a particular period by indicating the firm's sources and uses of cash during that period.* Such a statement is only useful for management and does not have any utility for external users.

Uses of Cash Flow Statement

A cash flow statement is a vital analytical tool that helps a financial manager in effective management of cash. As a result, the application of cash flow statement offers the following advantages to the users:

- It ensures effective planning and coordination of financial operations. The analysis of cash flow statement provides a financial manager sufficient basis to assess the position of the firm's cash that can be generated internally as against the total amount of cash required to meet future obligations of the concern. With the result, proper arrangements can be made well in advance for the availability of adequate cash if the future cash requirements of the business cannot be met internally.
- A comparison of the cash flow statement with the projected cash flow statement is very useful in evaluating cash forecasting.
- It may be an useful tool for the proper allocation of the firm's cash among its various activities/divisions.

The analysis of cash flow statement can also help the management in formulating appropriate financial policies regarding debts, credits, collections, dividends, etc.

NOTES

- It helps the management in investment decisions.
- A comparative analysis of the firm's cash flow statements enables a financial manager to assess the liquidity position of the firm.
- A careful study of cash flow statement provides answer to some typical questions like why cash position of the concern is tight, in spite of high incomes or vice-versa.

Concept of Cash Flow

The basic objective of cash flow analysis is to identify the business transactions technically known as *cash flow* that cause the change in the firms' cash and cash equivalents. In fact, cash flow can result either in *inflow* or *outflow* of cash and cash equivalent. Cash inflow refers to a business transaction that generates cash, and therefore, technically it is referred to as *source*. In the same way, cash outflow refers to a business transaction that utilizes cash and therefore, technically it is known as *application*. In fact, such cash flows can result from the following three major activities of an enterprise:

- *Operating activities* include such activities that have direct impact on the enterprise's business results. Therefore, such activities either result in operating incomes or operating expenses;
- *Investment activities* refers to such activities that result in either purchase or sale of long-term assets;
- *Financial activities* include activities that are responsible for the change in the company's capital structure and therefore are concerned with the capital and debt of the business.

We will discuss these topics further in the Unit.

To meet the above-mentioned objective of cash flow analysis, one has to use the same approach that is devised to analyse funds flow (net working capital). However, such an approach would call for slight modification to make it appropriate for the analysis of cash flows. In cash flow analysis, the non-current accounts, *i.e.*, fixed assets and long-term liabilities are given the same treatment as is recommended for such items in fund flow analysis. However, the changes in current accounts (except cash) which were reflected in the schedule of changes in working capital in case of fund flow analysis are now reflected in cash flow statement along with the changes in non-current accounts. The cash flow can be determined symbolically as:

$$\Delta C = \Delta A - \Delta L$$

where

Δ = Change in   C = Cash

A = Total assets except cash   L = Total liabilities

The above equation clearly reveals that change in cash can be computed by analysing the changes that occurred in all non-current and current accounts

except cash. The impact on cash position of a concern by the change in balance sheet items is given below:

Change in balance sheet items	*Impact on cash*
–Increase in current assets other than cash	Outflow of cash
–Decrease in current assets other than cash	Inflow of cash
–Increase in non-current assets	Outflow of cash
–Decrease in non-current assets	Inflow of cash
–Increase in current liabilities	Inflow of cash
–Decrease in current liabilities	Outflow of cash
–Increase in long-term liabilities	Inflow of cash
–Decrease in long-term liabilities	Outflow of cash

Sources and Application of Cash

The major sources and uses of cash are mentioned below:

Sources of Cash

- Issue of capital
- Issue of long-term debts such as debentures
- Sale of assets
- Cash from operation
- Decrease in current assets
- Increase in current liabilities

Application of Cash

- Redemption of capital
- Purchase of fixed assets
- Repayment of long-term debt
- Cash lost in operation
- Increase in current assets
- Increase in current liabilities

9.2.1 Limitations

The following are the limitations of cash flow statement:

- It is not a replacement for fund flow or income statement given that each performs a different unique function.
- It is not at par with income statements since it does not take into account non-cash items. The net cash arrived at cannot be termed as the net income of the respective company.

- The cash flow statements are not a true representation of the actual liquidity position of the firms since companies may try to manipulate the data by rescheduling purchases or payments.
- It is not useful for assessing the profitability of the firms since it does not consider cost or revenue items.
- It assesses cash flows of the past in the sense that it is historical and provides no true picture of projected cash flows.
- It is not an ideal tool for comparisons since every industry has different levels of capital invested which affects the magnitude of its cash flows.

9.2.2 Differences Between Fund Flow and Cash Flow Analysis

In fact, cash flow statement and fund flow statement do not differ much with each other as both the statements depict the same picture—transactions which result in the change of financial position during a particular accounting period. Commenting on the difference between these two statements Myer, 1961 is of the opinion that though 'these statements containing essentially the same story of financial events' have certain differences between them as summarized below:

- A fund flow statement gives a broad perspective by indicating changes in working capital whereas a cash flow statement indicates specifically the inflow and outflow of cash which is the one of the components of working capital as used in a fund flow statement. Therefore, cash flow is a narrow term as compared to fund flow.
- Fund flow analysis is governed by the mercantile system of accounting, *i.e.,* accrual basis. On the other hand, cash system of accounting is used for the preparation of cash flow statement.
- The amount of information as contained by a fund flow statement provides sufficient basis for long-range planning. In contrast, a cash flow statement tends to be more useful in short-run analysis.
- A fund flow statement attempts to identify the inflows and outflows of funds while cash flow statement is prepared with a purpose to recognize the inflows and outflows of cash.
- Under fund flow analysis, the changes in working capital items are shown in a separate statement known as 'schedule of changes in working capital' because fund flow statement fails to indicate such changes. In contrast, in cash flow analysis changes in both current and non-current accounts appear in the cash flow statement. Therefore, the preparation of a separate statement to indicate the changes in working capital components does not arise in cash flow analysis.

NOTES

Check Your Progress

1. Which accounting tool follows a cash system of accounting?
2. How does decrease in non-current asset impact cash?
3. Is the redemption of capital a source or application of cash?

9.3 PREPARATION OF CASH FLOW STATEMENT AS PER AS3

According to Accounting Standard (AS)-3, enterprises in India that have a turnover of more than ₹ 50 crore in a financial year need to prepare cash flow statement (CFS) in addition to basic financial statements *i.e.*, profit and loss account and balance sheet. Such a statement reflects the various sources from where cash was generated (inflow of cash) by an enterprise during the relevant accounting year and how these inflows were utilized (outflow of cash) by the enterprise. However, the Standard is not mandatory for small and medium scale companies. It is pertinent to mention here that the International Financial Reporting Standard (IFRS)-7 also prescribes that the enterprises must prepare a cash flow statement. Although both standards, *i.e.*, AS-3 and IAS-7, by and large prescribe the same mechanism for the preparation of cash flow statement except the treatment for bank overdraft and extraordinary items. IAS-7 mentions clearly that bank overdraft must be included in cash and cash equivalent and extraordinary items need not to be shown separately.

In accordance with the standards, an enterprise needs to take the following steps to prepare a cash flow statement:

- Identification and calculation of cash flows from various activities like operating, investing and financing; and
- Ascertaining net change (increase/decrease) in cash and cash equivalents.

A cash flow statement basically provides information to all stakeholders on the historical changes in cash and cash equivalents during the financial period for which the basic financial statements have been prepared by the enterprise. The statement helps the users of accounts:

- To identify the historical changes in the flow of cash and cash equivalents.
- To determine the future requirement of cash and cash equivalents.
- To assess the ability to generate cash and cash equivalents.
- To estimate the further requirement of generating cash and cash equivalents.
- To compare the operational efficiency of different enterprises.
- To study the insolvency and liquidity position of an enterprise.

Since the understanding of the terms 'cash' and 'cash equivalent' are a prerequisite for the preparation of the cash flow statement, therefore, it becomes mandatory for the students of accounting to know the meaning of the terms in the context of the standard. The term 'cash' as used in this standard includes cash on hand and demand deposits with banks. The term 'cash equivalents' as referred to in this standard includes:

- Short term (maximum three months of maturity from the date of acquisition)
- Highly liquid investments
- Readily convertible
- Convertible amounts of cash is known
- Subject to an insignificant risk of changes in value

A cash flow statement is recognized as a strategic tool for the management accountants as it addresses the following vital questions:

- Where did cash come from during the period?
- What was the cash used for during the period?
- What was the change in cash balance during the period?

The standard also provides the treatment of special items like interest, dividend, taxes on income and some other special items.

Source: Adapted from Training Material, Implementation of Accounting Standard with Specific Reference to Educational Institutions, The Institute of Chartered Accountants of India, New Delhi, 2012.

Let us now discuss some of the important concepts mentioned in the Accounting Standard 3:

Operating Activities

The amount of cash flows arising from operating activities is a key indicator of the extent to which the operations of the enterprise have generated sufficient cash flows to maintain the operating capability of the enterprise, pay dividends, repay loans and make new investments without recourse to external sources of financing. Information about the specific components of historical operating cash flows is useful, in conjunction with other information, in forecasting future operating cash flows.

Cash flows from operating activities are primarily derived from the principal revenue-producing activities of the enterprise. Therefore, they generally result from the transactions and other events that enter into the determination of net profit or loss. Examples of cash flows from operating activities are:

(a) cash receipts from the sale of goods and the rendering of services;

(b) cash receipts from royalties, fees, commissions and other revenue;

(c) cash payments to suppliers for goods and services;

(d) cash payments to and on behalf of employees;

(e) cash receipts and cash payments of an insurance enterprise for premiums and claims, annuities and other policy benefits;

NOTES

(f) cash payments or refunds of income taxes unless they can be specifically identified with financing and investing activities; and

(g) cash receipts and payments relating to futures contracts, forward contracts, option contracts and swap contracts when the contracts are held for dealing or trading purposes.

Some transactions, such as the sale of an item of plant, may give rise to a gain or loss which is included in the determination of net profit or loss. However, the cash flows relating to such transactions are cash flows from investing activities.

An enterprise may hold securities and loans for dealing or trading purposes, in which case they are similar to inventory acquired specifically for resale. Therefore, cash flows arising from the purchase and sale of dealing or trading securities are classified as operating activities. Similarly, cash advances and loans made by financial enterprises are usually classified as operating activities since they relate to the main revenue-producing activity of that enterprise.

Investing Activities

The separate disclosure of cash flows arising from investing activities is important because the cash flows represent the extent to which expenditures have been made for resources intended to generate future income and cash flows. Examples of cash flows arising from investing activities are:

(a) cash payments to acquire fixed assets (including intangibles). These payments include those relating to capitalized research and development costs and self-constructed fixed assets;

(b) cash receipts from disposal of fixed assets (including intangibles);

(c) cash payments to acquire shares, warrants or debt instruments of other enterprises and interests in joint ventures (other than payments for those instruments considered to be cash equivalents and those held for dealing or trading purposes);

(d) cash receipts from disposal of shares, warrants or debt instruments of other enterprises and interests in joint ventures (other than receipts from those instruments considered to be cash equivalents and those held for dealing or trading purposes);

(e) cash advances and loans made to third parties (other than advances and loans made by a financial enterprise);

(f) cash receipts from the repayment of advances and loans made to third parties (other than advances and loans of a financial enterprise);

(g) cash payments for futures contracts, forward contracts, option contracts and swap contracts except when the contracts are held for dealing or trading purposes, or the payments are classified as financing activities; and

(h) cash receipts from futures contracts, forward contracts, option contracts and swap contracts except when the contracts are held for dealing or trading purposes, or the receipts are classified as financing activities.

NOTES

When a contract is accounted for as a hedge of an identifiable position the cash flows of the contract are classified in the same manner as the cash flows of the position being hedged.

Financing Activities

The separate disclosure of cash flows arising from financing activities is important because it is useful in predicting claims on future cash flows by providers of funds (both capital and borrowings) to the enterprise. Examples of cash flows arising from financing activities are:

(a) cash proceeds from issuing shares or other similar instruments;

(b) cash proceeds from issuing debentures, loans, notes, bonds, and other short or long-term borrowings; and

(c) cash repayments of amounts borrowed.

Cash equivalents

These are held for the purpose of meeting short-term cash commitments rather than for investment or other purposes. For an investment to qualify as a cash equivalent, it must be readily convertible to a known amount of cash and be subject to an insignificant risk of changes in value. Therefore, an investment normally qualifies as a cash equivalent only when it has a short maturity of, say, three months or less from the date of acquisition. Investments in shares are excluded from cash equivalents unless they are, in substance, cash equivalents; for example, preference shares of a company acquired shortly before their specified redemption date (provided there is only an insignificant risk of failure of the company to repay the amount at maturity).

Other Important Standards Include:

- An enterprise should report separately major classes of gross cash receipts and gross cash payments arising from investing and financing activities, except to the extent that cash flows described under reporting of Cash Flow on a net basis.
- Cash flows arising from the following operating, investing or financing activities may be reported on a net basis: (a) cash receipts and payments on behalf of customers when the cash flows reflect the activities of the customer rather than those of the enterprise; and (b) cash receipts and payments for items in which the turnover is quick, the amounts are large, and the maturities are short.

NOTES

- Cash flows arising from each of the following activities of a financial enterprise may be reported on a net basis: (a) cash receipts and payments for the acceptance and repayment of deposits with a fixed maturity date; (b) the placement of deposits with and withdrawal of deposits from other financial enterprises; and (c) cash advances and loans made to customers and the repayment of those advances and loans.
- Cash flows arising from transactions in a foreign currency should be recorded in an enterprise's reporting currency by applying to the foreign currency amount the exchange rate between the reporting currency and the foreign currency at the date of the cash flow. A rate that approximates the actual rate may be used if the result is substantially the same as would arise if the rates at the dates of the cash flows were used. The effect of changes in exchange rates on cash and cash equivalents held in a foreign currency should be reported as a separate part of the reconciliation of the changes in cash and cash equivalents during the period.
- The cash flows associated with extraordinary items should be classified as arising from operating, investing or financing activities as appropriate and separately disclosed.
- Investing and financing transactions that do not require the use of cash or cash equivalents should be excluded from a cash flow statement. Such transactions should be disclosed elsewhere in the financial statements in a way that provides all the relevant information about these investing and financing activities.
- An enterprise should disclose the components of cash and cash equivalents and should present a reconciliation of the amounts in its cash flow statement with the equivalent items reported in the balance sheet.
- An enterprise should disclose, together with a commentary by management, the amount of significant cash and cash equivalent balances held by the enterprise that are not available for use by it.

Calculation of Cash from Operations

The major source of cash for a business is cash from trading operations. When the accounting system is based on cash system, the net profit as shown by profit and loss represents the cash from operations. However, in actual practice, commercial organizations maintain mercantile system of accounting. With the result the profit as disclosed by profit and loss account is not considered the actual cash from operation as it includes many transactions of notional cash. Thus, net profit as shown in profit and loss account is to be adjusted as to arrive at actual cash from operation. The non-cash transactions like outstanding incomes/ expenses, prepaid expenses, etc., should be adjusted. Further all non-fund items such as depreciation, preliminary expenses written off, etc., are also to be adjusted

NOTES

as is done in case of fund flow statement. A detailed proforma of the statement showing computation of cash from operations is given below:

Statement Showing Computation of Cash from Operations

Particulars	*Amount* (₹)
Net profit (as given in P&L A/c)	
Add:	
(a) *Decrease in Current Assets:*	
Sundry debtors	
Bill receivable	
Prepaid expenses	
Accrued income	
(b) *Increase in Current Liabilities:*	
Sundry creditors	
Bills payable	
Outstanding expenses	
Income received in advance	
(c) *Non-fund items debited to Profit and Loss Account:*	
Depreciation	
Goodwill written off	
Loss on sale of assets	
Preliminary expenses written off	
Less:	
(a) *Increase in Current Assets:*	
Sundry debtors	
Bill receivable	
Prepaid expenses	
Accrued income	
(b) *Decrease in Current Liabilities:*	
Sundry creditors	
Bill payable	
Outstanding expenses	
Income received in advance	
(c) *Non-fund items credited to Profit and Loss Account:*	
Profit on sale of assets	
Cash from operations	

Note: The current assets and current liabilities will not include cash balances and bank overdraft respectively in the determination of cash from operations.

NOTES

Illustration 9.1: From the following balance sheet of M/s S.B. Company Ltd., as on Dec. 31, 2010 and 2011, calculate cash from operation:

Liabilities	*2010* (₹)	*2011* (₹)	*Assets*	*2010* (₹)	*2011* (₹)
Share capital	1,20,000	1,50,000	Building	65,000	65,000
P&L A/c	45,000	65,000	Machinery	90,000	1,20,000
Sundry creditors	30,000	22,000	Stock	20,000	15,000
Outstanding expenses	1,200	400	Sundry debtors	18,000	20,000
Bill payable	18,000	22,000	Cash at bank	17,000	32,300
			Cash in hand	4,200	7,100
	2,14,200	2,59,400		2,14,200	2,59,400

Solution:

Calculation of Cash from Operation

			(₹)
Net profits as given (65,000 – 45,000)			20,000
Add:			
(a) Decrease in Current Assets:			
Stock		5,000	
(b) Increase in Current Liabilities:			
Bills payable		4,000	9,000
			29,000
Less:			
(a) Increase in Current Assets:			
Sundry debtors		2,000	
(b) Decrease in Current Liabilities:			
Sundry creditors	8,000		
Outstanding expenses	800	8,800	
			10,800
Cash from Operations			18,200

Methods of Reporting Cash Flows from Operating Activities: Direct and Indirect

An enterprise should report cash flows from operating activities using either:

(a) the direct method, whereby major classes of gross cash receipts and gross cash payments are disclosed; or

(b) the indirect method, whereby net profit or loss is adjusted for the effects of transactions of a non-cash nature, any deferrals or accruals of past or future operating cash receipts or payments, and items of income or expense associated with investing or financing cash flows.

NOTES

The direct method provides information which may be useful in estimating future cash flows and which is not available under the indirect method and is, therefore, considered more appropriate than the indirect method. Under the direct method, information about major classes of gross cash receipts and gross cash payments may be obtained either:

(a) from the accounting records of the enterprise; or

(b) by adjusting sales, cost of sales (interest and similar income and interest expense and similar charges for a financial enterprise) and other items in the statement of profit and loss for:

   i) changes during the period in inventories and operating receivables and payables;

   ii) other non-cash items; and

   iii) other items for which the cash effects are investing or financing cash flows.

Under the indirect method, the net cash flow from operating activities is determined by adjusting net profit or loss for the effects of:

(a) changes during the period in inventories and operating receivables and payables;

(b) non-cash items such as depreciation, provisions, deferred taxes, and unrealized foreign exchange gains and losses; and

(c) all other items for which the cash effects are investing or financing cash flows.

Alternatively, the net cash flow from operating activities may be presented under the indirect method by showing the operating revenues and expenses excluding non-cash items disclosed in the statement of profit and loss and the changes during the period in inventories and operating receivables and payables.

Forms of Cash Flow Statement

A cash flow statement can be prepared in two forms:

(i) Report Form, and
(ii) Account Form.

NOTES

The format of a cash flow statement (Report Form) is given below:

Cash Flow Statement for the Period Ending

Particulars	*Amount* (₹)
Balances at the Beginning:	
Cash in hand	
Cash at bank	
Add: *Cash Inflows:*	
Issue of share capital	
Issue of debentures	
Long-term loans	
Sale of fixed assets	
Cash from operations	
Less: *Cash Outflows:*	
Redemption of share capital	
Redemption of debentures	
Payment of long-term debts	
Purchase of fixed assets	
Non-trading payments e.g, dividends, taxes, etc.	
Cash lost in operations	
Balances at the end	
Cash in hand	
Cash at bank	

Alternatively, it may be shown in an account form as follows:

Cash Flow Statement for the Period Ending

Sources	*Amount* (₹)	*Application*	*Amount* (₹)
Balance in the Beginning:		Cash Outflows:	
Cash in hand		Redemption of share capital	
Cash at bank		Redemption of debentures	
Add: Cash Inflows:		Payment of long-term debts	
Issue of share capital		Purchase of fixed assets	
Issue of debentures		Non-trading payments	
Long-term loans		Cash lost in operation	
Sale of fixed assets		Balance at the end:	
Cash from operations		Cash in hand	
		Cash at bank	

Illustration 9.2: Prepare cash flow statement from the comparative balance sheet of S. B. Company Ltd. as given in Illustration 9.1.

Solution:

Cash Flow Statement

for the period ending December 31, 2011

Particulars		(₹)
Balances at Beginning:		
Cash in hand	4,200	
Cash at bank	17,000	21,200
Add: Cash inflows		
Issue of share capital	30,000	
Cash from operation	18,200	48,200
		69,400
Less: Cash outflows:		
Machinery	30,000	30,000
Balance at the End:		
Cash in hand	7,100	
Cash at bank	32,300	39,400

NOTES

Adjustment of Typical Items

The treatment of the typical items like depreciation, dividend, profit on sale of assets, etc., in the cash flow analysis is the same as is recommended for such items in the fund flow analysis. However, the provision for taxation is treated as a non-current item. The actual amount of tax paid during the year is shown in the cash flow statement as cash outflow. The current provision of taxation is added back to the amount of profit in order to ascertain cash from operation.

Preparation of Working Accounts and Notes (Hidden Transaction)

The preparation of working accounts and notes is as important in cash flow analysis as is in case of fund flow analysis. The procedure for ascertaining the hidden information is the same as is devised in the case of fund flow analysis.

9.4 PROBLEMS AND SOLUTIONS

Problem 9.1: The following schedule shows balance sheets in con- densed form of ESS EMM Co. Ltd., at the beginning and end of the year 2011.

NOTES

Liabilities	*1-1-2011* (₹)	*31-12-2012* (₹)	*Assets*	*1-1-2011* (₹)	*31-12-2012* (₹)
Sundry creditors	55,000	83,000	Cash balances	25,000	18,000
Bills payable	20,000	16,000	Sundry debtors	1,60,000	2,00,000
Provision for tax	40,000	50,000	Bills receivable	20,000	30,000
Proposed dividend	42,000	50,000	Stock in trade	77,000	1,09,000
6% Debentures	1,50,000	1,00,000	Machinery	80,000	2,00,000
General reserve	40,000	70,000	Building	2,00,000	1,70,000
Profit and loss account	30,000	48,000	Goodwill	1,15,000	90,000
Capital	3,00,000	4,00,000			
	6,77,000	8,17,000		6,77,000	8,17,000

The following information concerning the transactions is available:

(i) An interim dividend of ₹ 20,000 was paid in 2011.

(ii) Depreciation of ₹10,000 and ₹ 20,000 have been charged on Machinery and Building respectively in 2011.

(iii) Income-tax ₹ 35,000 was paid during the year.

Solution:

Calculation of Cash from Operations

			(₹)
Net profits as given (48,000 – 30,000)			18,000
Add:			
(a) Increase in Current Liabilities:			
Sundry creditors		28,000	28,000
(b) Non-fund items Debited to P&L A/c:			
Goodwill		25,000	
Depreciation:			
Machinery	10,000		
Building	20,000	30,000	
Proposed dividend		50,000	
Interim dividend		20,000	
Provision for tax		45,000	
General reserve		30,000	2,00,000
			2,46,000
Less:			
(a) Increase in current assets:			
Sundry debtors	40,000		
Stock in trade	32,000		
Bills receivable	10,000	82,000	
(b) Decrease in current liabilities:			
Bills payable	4,000	4,000	86,000
Cash from Operations			1,60,000

Statement of Sources and uses of Cash

			(₹)
Cash Balance at the Beginning:			25,000
Add:	Cash Inflows:		
	Issue of share capital	1,00,000	
	Cash from operation	1,60,000	
	Sale of building	10,000	2,70,000
			2,95,000
Less:	Cash Outflows:		
	Redemption of debentures	50,000	
	Purchase of machinery	1,30,000	
	Payment of dividend	42,000	
	Payment of interim dividend	20,000	
	Payment of tax	35,000	2,77,000
	Cash balance at the end		18,000

Working Notes:

Provision for Tax Account

	(₹)		(₹)
To Tax paid	35,000	By Balance b/d	40,000
To Balance c/d	50,000	By P&L A/c (balancing figure)	45,000
	85,000		85,000

Machinery Account

	(₹)		(₹)
To Balance b/d	80,000	By Depreciation	10,000
To Purchases (balancing figure)	1,30,000	By Balance c/d	2,00,000
	2,10,000		2,10,000

Building Account

	(₹)		(₹)
To Balance b/d	2,00,000	By Depreciation	20,000
		By Balance c/d	1,70,000
		By Closing balance (Sale of building)	10,000
	2,00,000		2,00,000

Problem 9.2: The income statement and balance sheet of an enterprise for the year ended 31st December, 2012 was as follows:

(a) Income statement for the year ended 31st Dec, 2012 (₹)

Sales	5,00,000
Cost of sales	3,50,000
Tax provision	40,000
Dividend provision	20,000

NOTES

(b) Balance sheet

Liabilities	*1-1-2012* (₹)	*31-12-2012* (₹)	*Assets*	*1-1-2012* (₹)	*31-12-2012* (₹)
Capital	1,20,000	1,20,000	Fixed Assets (Gross)	1,40,000	1,90,000
Reserve	40,000	1,30,000	Depreciation	(40,000)	(50,000)
Debentures	70,000	80,000	Inventory	90,000	75,000
Sundry creditors	20,000	40,000	Bills receivable	55,000	1,72,000
Bill payable	18,000	26,000	Cash balances	23,000	29,000
Dividend provision	—	20,000			
	2,68,000	4,16,000		2,68,000	4,16,000

You are required to prepare cash flow statement for the year ended Dec. 31, 2012.

Solution:

Calculation of Profit from Operation

	(₹)
Sales	5,00,000
Less: Cost of sales	3,50,000
Profit before tax	1,50,000
Less: Tax	40,000
Net profit after tax	1,10,000

Calculation of Cash from Operation (₹)

Net profit after tax			1,10,000
Add:			
(a) Decrease in Current Assets:			
Inventory		15,000	
(b) Increase in Current Liabilities:			
Sundry creditors	20,000		
Bill payable	8,000	28,000	
(c) Non-fund items Debited to P&L A/c:			
Dividend	20,000		
Depreciation	10,000	30,000	73,000
Less:			1,83,000
(a) Increase in Current Assets:			
Bill receivable		1,17,000	1,17,000
Cash from operation			66,000

Cash Flow Statement
for the year ended 31st December 2012

		(₹)
Cash balance as on 1-1-2012		23,000
Add: Cash Inflows:		
Cash from operation	66,000	
Debentures	10,000	
		76,000
		99,000
Less: Cash Outflows:		
Purchase of fixed assets	50,000	
Dividend	20,000	
		70,000
Cash balance as on 31st December, 2012		29,000

NOTES

Problem 9.3: Shabnam Co. Ltd. wants to prepare a cash flow statement for the year ended December 31, 2012 from the comparative balance sheets given below:

Comparative Balance Sheets

Liabilities	*2011* (₹)	*2012* (₹)	*Assets*	*2011* (₹)	*2012* (₹)
Share capital	5,00,000	6,50,000	Machinery	2,80,000	3,20,000
Debentures	3,40,000	2,00,000	Building	3,50,000	3,50,000
Sundry Creditors	1,60,000	67,000	Investment at cost	2,40,000	2,65,000
Provision for doubtful debts	4,500	3,000	Goodwill	70,000	55,000
Profit and Loss Account	75,500	1,20,000	Bank balance	40,000	–
Bank overdraft	–	45,000	Inventory	60,000	70,000
			Bills receivable	40,000	25,000
	10,80,000	10,85,000		10,80,000	10,85,000

The following additional information is available:

(i) Depreciation charged to profits on machinery for the year 2012 amounts to ₹ 40,000.

(ii) Dividends paid during the year 2012 were as follows:

(a) 2011 (final) on the capital as on 31-12-2011 at 10% *less* 25% tax

(b) 2012 (interim) 5% free of tax.

Explain how the overdraft of ₹ 45,000 as on 31st December 2012 has arisen.

NOTES

Solution:

Calculation of Cash from Operation

				(₹)
Profit as given (1,20,000 – 75,500)				44,500
Add:				
(a) Decrease in Current Assets:				
Bills receivable			15,000	
(b) Non-fund items Debited to P&L A/c:				
Depreciation on Machinery			40,000	
Goodwill			15,000	
Dividend Paid:				
Final 2006	37,500			
Interim 2007	32,500	70,000	1,25,000	1,40,000
				1,84,500
Less:				
(a) Increase in Current Assets:				
Inventory			10,000	
(b) Decrease in Current Liabilities:				
Sundry Creditors			93,000	
(c) Non-fund items Credited to P&L A/c:				
Decrease in provision for doubtful debts			1,500	
				1,04,500
Cash from Operation				80,000

Cash Flow Statement

for the year ended 31st Dec., 2012

Cash balance on 1-1-2012			40,000
Add: Cash Inflows:			
Share capital		1,50,000	
Cash from operation		80,000	
			2,30,000
			2,70,000
Less: Cash Outflows:			
Purchase of machinery		80,000	
Purchase of investment		25,000	
Redemption of debentures		1,40,000	
Dividends paid:			
Final - 2006	37,500		
Interim - 2007	32,500	70,000	
			3,15,000
Overdraft on Dec. 31, 2012			45,000

Workings:

Machinery Account

	(₹)		(₹)
To Balance b/d	2,80,000	By Balance c/d	3,20,000
To Purchases (balancing figure)	80,000	By Depreciation	40,000
	3,60,000		3,60,000

NOTES

Problem 9.4: Mr Smart submits the following statement in respect of his financial position as on 31st March, 2011 and 2012:

Balance Sheet

Liabilities	*31-3-2011* (₹)	*31-3-2012* (₹)	*Assets*	*31-3-2011* (₹)	*31-3-2012* (₹)
Sundry creditors	60,000	45,000	Building	1,20,000	90,000
Bills payable	45,000	50,000	Investments	60,000	60,000
Capital	1,75,000	1,20,000	Bills receivable	30,000	2,500
			Stock in trade	30,000	35,000
			Cash balances	40,000	27,500
	2,80,000	2,15,000		2,80,000	2,15,000

Mr Smart further reports that there were no drawings and no purchase or sale of buildings. You are required to prepare a Statement of Cash Flow.

Solution:

As reported by Mr Smart there were no drawings during the year and as such the decrease in the amount of capital from ₹ 1,75,000 to ₹ 1,20,000 *i.e.*, ₹ 55,000 has been due to trading loss during the year. Accordingly the cash lost in operation is computed as under:

Computation of Cash Lost in Operation (₹)

Trading Loss (1,75,000 – 1,20,000)		(–) 55,000
Add:		
(a) Decrease in Current Assets:		
Bills receivable	27,500	
(b) Increase in Current Liabilities:		
Bill payable	5,000	
(c) Non-fund items Debited to P&L A/c:		
Depreciation on building	30,000	(+) 62,500
		(+) 7,500
Less:		
(a) Increase in Current Assets:		
Stock in trade	5,000	
(b) Decrease in Current Liabilities:		
Sundry creditors	15,000	
		(–) 20,000
Cash lost in Operation		(–) 12,500

Cash Flow Statement

for the year ended 31st March, 2012

NOTES

	(₹)
Cash balance on 1-1-2011	40,000
Add: Cash Inflows:	–
	40,000
Less: Cash Outflows:	
Cash lost in operation	12,500
Cash balance as on 31-3-12	27,500

Problem 9.5: The following were the Balance Sheets of the Beauty Corporation for 2010 and 2011. Prepare a Cash Flow Statement for the year.

Balance Sheets of Beauty Corporation

Liabilities	*31-12-2010* (₹)	*31-12-2011* (₹)	*Assets*	*31-12-2010* (₹)	*31-12-2011* (₹)
Capital	2,50,000	2,50,000	Fixed assets (Net)	2,00,000	1,80,000
Reserve & surplus	90,000	1,30,000	Depreciation (accumulated)	(70,000)	(90,000)
Accounts payable	45,000	52,000	Sundry debtors	48,000	40,000
Sundry creditors	38,000	26,000	Stock	65,000	72,000
Outstanding wages	6,000	10,000	Prepaid rent	4,500	6,000
			Cash balances	1,11,500	1,70,000
	4,29,000	4,68,000		4,29,000	4,68,000

The following additional information is also available:

Sales	3,82,000
Cost of goods sold	2,65,000
Wages	45,000
Rent	12,000
Depreciation	20,000

Solution:

Computation of Net Profit

		(₹)
Sales		3,82,000
Less: Cost of goods sold	2,65,000	
Wages	45,000	
		3,10,000
		72,000
Less: Rent	12,000	
Depreciation	20,000	32,000
Net profit		40,000

NOTES

Computation of Cash from Operation (₹)

Net Profit			40,000
Add:			
(a) Decrease in Current Assets:			
Sundry debtors		8,000	
(b) Increase in Current Liabilities:			
Accounts payable	7,000		
Outstanding wages	4,000	11,000	
(c) Non-fund items Debited to P&L A/c			
Depreciation		20,000	
			39,000
			79,000
Less:			
(a) Increase in Current Assets:			
Stock	7,000		
Prepaid rent	1,500	8,500	
(b) Decrease in Current Liabilities:			
Sundry creditors		12,000	
			20,500
Cash from Operation			58,500

Cash Flow Statement

for the year ended 31st Dec., 2011

		(₹)
Cash balance on 1-1-2011		1,11,500
Add: Cash Inflows:		
Cash from operations	58,500	58,500
		1,70,000
Less: Cash Outflows:		–
Cash balance as on 31-12-2011		1,70,000

Check Your Progress

4. List the two steps required to prepare a cash flow statement as per AS 3.
5. Which category of activities comprise of option and swap contracts?
6. Define direct method.
7. Mention the accounting treatment of provision for taxation in the cash flow statement.

9.5 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

NOTES

1. Cash flow statement is the accounting tool which used the cash system of accounting.
2. Decrease in non-current assets results in inflow of cash.
3. Redemption of capital is an application of cash.
4. The two steps required to prepare a cash flow statement are: (i) identification and calculation of cash flows from various activities and ascertaining net change in cash and cash equivalents.
5. Option contracts and swap contracts fall under the category of investing activities.
6. The direct method is a method of reporting cash flows from operating activities whereby major classes of gross cash receipts and gross cash payments are disclosed.
7. The provision for taxation in cash flow statement is treated as a non-current item. The actual amount of tax paid during the year is shown in the cash flow statement as cash outflow. The current provision of taxation is added back to the amount of profit in order to ascertain cash from operation.

9.6 SUMMARY

- A cash flow statement is a statement which provides a detailed explanation for the change in a firm's cash during a particular period by indicating the firm's sources and uses of cash during that period.
- Cash flow statement is governed by the cash system of accounting.
- The basic aim of cash flow analysis is to determine what transactions caused the cash balance to change during a particular period.
- Cash flow statement is governed by the cash system of accounting.
- To determine cash flow, the non-current accounts *i.e.*, fixed assets and long-term liabilities are analysed as before, and changes in current accounts except cash are also analysed.
- The change in cash can be computed by analysing change that occurred in all non-current and current accounts except cash.
- The major source of cash for a business is cash from trading operations.
- A cash flow statement is a vital analytical tool in the hand of financial manager that helps him in the proper management of cash.

- A comparative analysis of the firm's cash flow statements enables a financial manager to assess the liquidity position of the firm.
- A careful study of cash flow statement provides answer to some typical questions like why cash position of the concern is tight, in spite of high incomes or vice-versa.

NOTES

9.7 KEY WORDS

- **Cash flow statement:** It is a statement which attempts to measure the inflows and outflows of cash that result from various business activities during a particular accounting period.
- **Operating activities:** It refers to such activities that have direct impact on the enterprise's business results.
- **Investment activities:** It refers to such activities that result in either purchase or sale of long-term assets.
- **Financial activities:** It includes activities that are responsible for the change in the company's capital structure.
- **Cash from operations:** It is the net profit as shown by profit and loss, when the accounting system is based on cash system.

9.8 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. Write a short note on the concept of 'Cash Flow'. What objectives of cash flow analysis?
2. What is the difference between funds flow and cash flow statement?
3. Write short notes on:
   (a) Notional cash and
   (b) Non-cash items.
4. Draw a cash flow statement with the help of imaginary figures.
5. List the major sources and application of cash with examples.
6. What is the utility of preparing cash flow statement?

Long-Answer Questions

1. Explain the procedure of preparing a cash flow statement.
2. Discuss the procedures of ascertaining cash from operation as required for the preparation of a cash flow statement.

NOTES

3. Explain the procedure of preparing a cash flow statement.
4. Discuss the procedures of ascertaining cash from operation as required for the preparation of a cash flow statement.
5. Following are the comparative balance sheets of IQRA Ltd.

Liabilities	*2011* (₹)	*2012* (₹)	*Assets*	*2011* (₹)	*2012* (₹)
Share capital	1,80,000	1,90,000	Cash	60,000	40,000
Sundry creditors	64,000	76,000	Sundry debtors	1,55,000	1,90,000
Profit and loss A/c	29,000	35,600	Land and building	50,000	62,000
			Patent rights	8,000	9,000
	2,73,000	3,01,000		2,73,000	3,01,000

Prepare a Cash Flow Statement.

6. Super Max Co. Ltd. wants to prepare a 'Cash Flow' statement for the year ended December 31, 2012, from the details given below:

(a) Income statement for the year ended 31-12-2012

Sales	29,000
Cost of sales	19,900
Tax provision	2,500
Dividend provided	1,600

(b) Balance Sheets

Liabilities	*2011* (₹)	*2012* (₹)	*Assets*	*2011* (₹)	*2012* (₹)
Capital	8,000	8,000	Fixed assets (Gross)	12,000	18,500
Reserves and supplies	6,000	11,000	Depreciation	(3,500)	(5,500)
Bank loan (long-term)	4,000	6,000	Inventory	8,000	7,000
Current liabilities	3,000	5,200	Accounts receivable	4,000	6,800
Dividend provided	–	1,600	Cash	500	5,000
	21,000	31,800		21,000	31,800

5. Following are the balance sheets of Super & Superior Company Ltd.

Liabilities	*Dec. 2011* (₹)	*Dec. 2012* (₹)	*Assets*	*Dec. 2011* (₹)	*Dec. 2012* (₹)
Share capital	70,000	74,000	Land	20,000	30,000
6% Debentures	12,000	6,000	Goodwill	10,000	5,000
Bills payable	10,000	11,000	Stock	49,200	42,700
Sundry creditors	1,060	1,640	Debtors	14,900	17,700
Profit and loss A/c	10,040	10,560	Cash	9,000	7,800
	1,03,100	1,03,200		1,03,100	1,03,200

Additional Information:

(i) Dividends were paid totalling ₹ 3,500.
(ii) Land was purchased for ₹ 10,000 and amount provided for the amortization of goodwill totalled ₹ 6,000.
(iii) Debentures loan was repaid ₹ 6,000.

You are required to prepare cash flow statement.

NOTES

6. From the following balance sheets of Sweety Limited as on December 31, 2011 and 2012, you are required to prepare cash flow statement for the year ended December 31, 2012.

Liabilities	*2011* (₹)	*2012* (₹)	*Assets*	*2011* (₹)	*2012* (₹)
Share capital	2,00,000	2,00,000	Machinery	87,000	86,000
Profit and loss	30,000	31,000	Building	52,000	48,000
Sundry creditors	8,000	5,400	Investment	78,000	80,000
Bills payable	1,200	800	Stock	30,000	23,400
Provision for taxation	16,000	18,000	Bills receivable	2,000	3,200
Provision for doubtful debts	400	600	Cash at bank	6,600	15,200
	2,55,600	2,55,800		2,55,600	2,55,800

Additional Information:

(i) Depreciation charged to plant ₹ 4,000. (ii) Provision for taxation of ₹ 19,000 was made during 2012.

9.9 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice*, 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management*, 4th edition. New Delhi: Vikas Publishing House.

NOTES

BLOCK - III
COST ANALYSIS

UNIT 10 BUDGETING

Structure

10.0 INTRODUCTION

Budgetary control is an important tool of planning and control. *Planning* involves looking systematically at the future so that decisions can be made today which will bring the company its desired results. *Control* is the process of measuring and correcting actual performance to ensure that plans for implementing the chosen course of action are carried out. In this unit, you will learn about the concept of budgeting and budgetary control.

10.1 OBJECTIVES

After going through this unit, you will be able:

- Explain the meaning of budget
- Discuss the importance and limitations of budgetary control
- Describe the classification of budgets
- Examine the preparations of sales, production and cash budgets

10.2 MEANING OF BUDGET

Budget is generally recognized as a plan of action to be pursued by an organization during a defined period of time in order to achieve its objectives. It is a statement of anticipated results expressed either in financial or non-financial terms. According to Williamson (2003) *A budget is a formal plan of action expressed in monetary*

and other quantitative terms. Gordon and Shillinglow (1974) state, *Budget is a pre-determined detailed plan of action developed and distributed as a guide to current operations and as a partial basis for the subsequent evaluation of performance*.

NOTES

CIMA (1991) defines *A budget is a financial or quantitative statement prepared prior to a definite period of time of the policy to be pursued during that for the purpose of attaining a given objective*.

Sizer (1979) explains *Budgets are financial and/or quantitative statements prepared and approved prior to a defined period of time of the policy to be pursued during that period for the purpose of attaining given objective*.

Author MA Sahaf is of the view that *a budget is a detailed schedule of the proposed combinations of the various factors of production which the management deems to be the most profitable for the defined period. It may be a forecast of sales, production costs, distribution costs, and administrative and financial expenses–and, therefore, of profit or loss*. It serves as a road map for executives and makes them aware when the company is straying from its planned route.

Considerations in Preparing Budget

The following important points must be borne in mind while preparing budget:

- Budgets are prepared to achieve the objectives of the business. No useful budget can be prepared without a complete knowledge of the objectives, nature and policies of the business.
- The duration of the budget must be determined according to the special circumstances of each business. Ordinarily, every company needs both short-term as well as long-term budgets. Short-term are usually in the form of income, expenditure, cash and sales. Similarly, the examples of long-term budgets are capital expenditure, training of business personnel, and expansion of the business.
- The persons who prepare the budgets must be honest and sincere. They should possess full knowledge of the nature, targets and the resources of the company. They must have foresight and competence to prepare well-balanced budgets.
- Adequate, accurate and reliable statistical information must be available for the preparation of a good budget. Past experience helps in projecting future.
- Budget must be reasonably elastic and flexible. It must be capable of being adjusted and changed according to new changes.
- An overenthusiastic business may fix-up extraordinarily high targets. They may prove to be unrealistic or incapable of being achieved. Efforts made in preparing the budgets may go waste. To avoid these dangers, budgets must be prepared by men of experience and foresight. On the one hand, they will

try to fix up the targets according to their resources and on the other hand, they will keep the targets of the previous budgets quite separate from the new targets.

NOTES

10.2.1 Budgetary Control: Importance and Limitations

Commercial organizations always aim to attain the highest volume of sales at the minimum cost in order to maximize their profits. To attain this objective, organizations need to realize that planning and control of activities become essential absolutely. It is, in fact, the system of budgetary control that provides the organizations with the framework which helps them to achieve this objective.

Budgetary control is a systematic process designed to plan and control the major activities of a firm's business through budgets prepared in advance with an objective to ensure effective use of resources. In the words of Batty (1978), *Budgetary control is a system which uses budgets as a means of planning and controlling all aspects of producing and/or selling commodities or services*. According to Scott (1970), *it is the system of management control and accounting in which all operations are precasted and so far as possible planned ahead and the actual results compared with the forecasted and planned ones*.

CIMA (1991) defines budgetary control as, the establishment of budgets relating to the responsibilities of executives to the requirements of a policy and the continuous comparison of actual with budgeted results, either to secure by individual action the objective of that policy or to provide a basis for its revision.

In the opinion of Brown and Howard (1975), *Budgetary control is a system of controlling costs which includes the preparation of budgets, coordinating the departments and establishing responsibilities, comparing actual performance with the budgeted and acting upon results to achieve maximum profitability*.

As per MA Sahaf, *budgetary control is a process of managing an organization in accordance with an approved budget in order to keep total expenditure within authorized limits. It is designed to assist the management in deciding the future course of action and to develop the basis for evaluating the efficiency of operations*. Thus, a budgetary control consists of:

- Preparation of budgets for major activities of the business;
- Measurement and comparison of actual results with budgeted targets;
- Computation of deviation, if any; and
- Revision of budget, if required.

Thus, budgetary control requires preparation and designing of the budgets revealing clearly the financial responsibilities of executives in relation to the requirements of the overall policy of the company followed by a continuous comparison of actual business results with budgeted results to secure the objectives of the policy. If the principles of budgeting are carried out in a proper manner, the

company can be assured that it will efficiently use all of its resources and achieve the most favourable results possible in the long run.

Objectives of Budgetary Control

NOTES

The main objectives of budgetary control are as under:

- To provide useful, accurate and reliable information to enable managers formulate future business policies.
- To help the organizations in exercising control over costs by preparing separate budgets for each department To evaluate the results of various policies and facilitate supervision over the various factors of production.
- To eliminate the danger of over capitalization and under capitalization by determining the total capital requirements of a business firm with the help of production budget and working capital estimates.
- To locate deficiencies in production system by preparing separate production capable of ascertaining the efficiency of production.
- To promote research and development activities of an organization as budgetary control policies and programmes are usually based on past experience.

Importance of Budgetary Control

Budgetary control is perhaps the most useful tool used by the management for planning and controlling major activities of the business. However, the system of budgetary control in itself does not ensure good planning or control but it helps executives to plan ahead and exercise control over people and operating events. In fact, such a system not only provides information on probable future business results but also the resources like money, men, materials and facilities required to achieve such results. The following most notable benefits derived from the system of budgetary control explain its importance:

- Through its disciplined approach, it coordinates the planning of all functional executives towards the common profit making goal.
- Motivates executives to think ahead by impressing upon them to formalize their planning efforts.
- Provides managers an opportunity for self-evaluation by offering them goals and objectives against which they can evaluate their performance without any difficulty. Such an arrangement makes each member of the organization clear about his role and contribution in attaining organizational goals.
- Enables an organization to predetermine the benefits and costs of the projects under various alternative operating conditions. Such a comparative analysis helps it to evaluate the most appropriate allocation of resources.
- Provides a framework that specifies measurable periodic objectives for each phase of planning.

- Helps managers to identify expected operation problems from business activities but also provides them the basis for solving these problems or avoiding them before they occur.
- Make employees of the organization conscious of the needs to conserve business resources.
- Maximize benefits of decentralization.
- Makes it obligatory for the enterprise to maintain adequate financial records that can be associated with the budget.
- Serves as an excellent vehicle and effective communication system for the exchange of ideas and coordination of plans among various levels of management.
- Reveals budgets prepared for efficient and effective use of resources.
- Increases participation of employees in the preparation and execution of budgets thereby boosting the morale among them which in turn contributes to the output.
- Helps a company meet market competition efficiently by keeping the cost at the minimum level.

Limitations of Budgetary Control

Despite the benefits mentioned earlier, budgetary control suffers from serious limitations. Management must keep such limitations in mind while using the tool of budgetary control. The major limitations of budgetary control system are summarized below:

- Since budget estimates are based on approximations and personal judgements, therefore, they are always doubtful. In fact, the quality of budgets is always associated with the intelligence, skills and experience of the budget persons.
- The premises of the budgetary control system change rapidly with the change in business conditions. As a result, business executives face a lot of difficulties in the execution of budgets.
- The success of budgetary control largely depends on its execution which in turn depends on the cooperation and participation of all levels of management. Every member of the organization must direct his efforts to achieve the objectives of the budget. Any lapse in their coordination or cooperation may result in poor performance.
- The installation of budgetary control system is a costly affair, and therefore, small organizations may not afford it. Even financially sound enterprises must adopt this system only after analysing properly its cost and benefits.
- Budget targets sometimes are considered as pressure tactics which lower the morale of the employees.

- The formulation of the budgets is a time-consuming process as a good amount of time is wasted in their preparation, evaluation and revision.
- There is an old saying to the effect that 'a man is usually down or what he isn't upon'. Often executives do not realize the utility of the budgetary control system.
- Under budgetary control system every budget centre tries to achieve its objectives without taking into consideration the objectives of other budget centres and overall objectives of the budgetary control system. This creates conflict among various units of the organization which ultimately interrupts the efficiency of the system.

Essential Characteristics of a Good Budgetary Control

A good budgetary control must possess the following characteristics:

- There must be a common authority to enjoy the rights and privileges as well as to fulfil the obligation. Actual users must be consulted before actually allocating different resources.
- The supervisory staff must be held responsible for all the functions of the business and proper utilization of all the resources of the business.
- Independence of action must be ensured for the administration in those matters for which they are accountable. In such matters, they must be consulted and their views should be given due weightage.
- One who gives orders must also provide facilities for the execution of those orders.
- There must be test checking of the work at regular intervals and the results must be compared with the targets. Shortcomings must be ascertained and measures should be suggested to overcome them.
- There must be some system for rewarding better results and penalizing poor results. Incentives for better work must be provided. Inefficiency must not be condoned.

Requirements for Budgetary Control

The prerequisites for good budgetary control are essentially the same as for sound business management. For effective budgetary control, the firms need to:

- develop the statement of objectives and policies to guide management in reaching its business goals;
- build up a sound plan for the organization with clearly defined responsibilities and authorities for each management and supervisory position;
- establish a clear understanding of cost behaviour and product cost structure;
- develop a plan of operations over a given period of time to achieve objectives efficiently and effectively;

NOTES

- provide for measurement of performance through timely comparative control reports;
- take necessary action in the execution of plans to set right unsatisfactory performance;
- revise the budgets when required.

The concept of budgetary control formalizes the process implied in these requirements by incorporating the above steps into a comprehensive financial plan or budget. It should be obvious that the financial plan or budget is not just a forecast or a summary of the business results a year ahead. It is instead a plan of operation. The plan must be based on good operating practices and soundly conceived management strategy. It should have a certain extent of flexibility, a 'stretch' in it. This means that operating men should incorporate in the budget performance, goals that are attainable by hard work and dedicated effort. An easy test of whether or not a business budget has been built on good planning and control concept is to check these points:

- Sales and production requirements should be defined in terms of quantities by products.
- The variable and total costs of producing each product should be identified on a predetermined basis in the budget.
- Budgeted costs and expenses should be stated for each responsibility centre.
- The degree of capacity utilization of major equipments and facilities should be clearly defined in the budget plan.
- All departmental budgets should be based on the same volumes of product and service requirements and should meet an acceptable profit goal.

If an organization's budgetary control system does not meet these tests, functional executive need to discuss the lapses with the budget personnel to seek improvements in the system.

Check Your Progress

1. What are the things without whose knowledge no useful budget can be prepared?
2. List the constituents of a budgetary control.
3. How does budgetary control help organizations eliminate the danger of over capitalization and undercapitalization?

10.3 CLASSIFICATION OF BUDGETS AND BUDGETS PREPARATION

NOTES

Different authorities have given different classifications of budgets. Some classify them on the basis of functions involved, period covered, nature of transactions while others classify them according to activity levels. Accordingly, the following classifications are given:

Budgets according to activity levels:

- Fixed budget
- Flexible budget

Classification on the basis of nature of transactions:

- Operating budget
- Capital budget

Period classification:

- Long-term budget
- Short-term budget

Functional classification:

- Master budget
- Subsidiary budget

However, classification on the basis of functions is more popular and common almost in every business concern.

Fixed Budget

Although this approach to budgeting is not popular among the firms yet a few firms do use fixed budget in certain areas of expenses management. Generally fixed budget is referred to as predetermined costs projected at a particular capacity level. That is, once capacity is projected at a particular level, the individual department gathers and classifies their costs at that level. The budget thus prepared is known as a fixed budget. Such budgets assume that the amount of rupees shown in the budget is triggered by the passage of time irrespective of production levels or the volume of activity. The CIMA (1991) defined fixed budget as a budget which is designed to remain unchanged irrespective of the level of activity actually attained. In the words of Wilson (1975) *a fixed budget is one that is compiled for a given set of assumed operating conditions and for a clearly specified but estimated level of activity, and which management proposes to leave unchanged during the period to which it relates—regardless of changes in the actual level of activity experienced or in the conditions facing the company during that period*. Thus, fixed budget is a plan that expresses only one level of

NOTES

estimated activity or volume. Such a budget is also known as static budget. The term 'fixed budget' is probably a misnomer because this budget really is never fixed. Business and economic conditions constantly change and the management has to review and change the budgets in the light of those changes.

Flexible Budget

Firms that recognize the tendency of fixed overhead to vary with substantial changes in production prefer to use a flexible budget. This is simply a series of fixed budgets that apply to varying levels of production. According to CIMA (1991), a flexible budget is *a budget which, by recognizing the difference between fixed, semi-fixed and variable costs, is designed to change in relation to the level of activity attained.* Thus, a flexible budget is a series of cost budgets, each prepared for a different level of capacity. The capacity levels are set at percentages of capacity or at the production of a specified number of units at set levels of capacity. In fact, costs are broken down into fixed, variable, and semi-variable under various levels of capacity. Although flexible budgets generally do not distinguish between variable and fixed overhead yet they provide a single rate for both types of overheads. This rate is established by dividing estimated overhead at the normal production level by the normal volume of production.

Flexible budgeting can be incorporated in one of two ways—*step budget*, wherein budgets are developed for different levels of operation, or *variable budget*, where budgets are prepared on a variable cost basis providing progressively greater budget allowances as the volume of activity increases. Business executives prefer the technique of flexible budgeting as it can be easily understood by the supervisors at all levels and with all degrees of education because of the realistic way in which such budgets accommodate actual operating conditions in the plant. The major significance of flexible budgeting is that it provides completely realistic budget amounts. There are very less chances for variances, which too can be the result of inefficient control or changes in operating conditions.

Illustration 10.1: The cost details obtained from financial records of Safa Ltd., for production of 500 units are given below:

Particulars	*Per Unit (₹)*
Material	40
Labour	30
Variable overhead	12
Selling and distribution expenses (20 per cent fixed)	10
Administrative expenses (40 per cent variable)	15
Fixed overheads (₹ 7,500)	15
Selling cost per unit	122

You are required to prepare a budget for production of:

(i) 700 units; and (ii) 900 units.

Solution:

Safa Ltd.
Flexible Budget

	OUTPUT					
	500 Units		*700 Units*		*900 Units*	
	Per Unit	*Amount (₹)*	*Per Unit*	*Amount (₹)*	*Per Unit*	*Amount (₹)*
Material	40	20,000	10	28,000	40	36,000
Labour	30	15,000	30	21,000	30	27,000
Variable overhead	12	6,000	12	8,400	12	10,800
Selling & distribution						
Expenses:						
Fixed (20 per cent)	2	1,000	1.43	1,000	1.11	1,000
Variable (80 per cent)	8	4,000	8	5,600	8	7,200
Administrative Expenses:						
Fixed (60 per cent)	9	4,500	6.43	4,500	5	4,500
Variable (40 per cent)	6	3,000	6	4,200	6	5,400
Fixed overhead	15	7,500	10.71	7,500	8.33	7,500
Total Cost of Sales	122	61,000	114.5	80,000	110.44	99,400

NOTES

Operating Budget

The operating budget is a plan of the expected revenues and expenses from normal operations and activities to be carried out by the organization in the future. Such a budget contains a detailed programme of activities that a firm desires to perform during the budget period which normally consists of one year. The profit and loss items like sales, production, distribution expenses and administrative overheads are also projected in this budget. In fact, the budget often states such performance measures which are not apparently seen in the financial statements. The best examples of operating budgets are raw material budget, inventory budget, labour force budget, and so on The nature and scope of various types of operating budgets are discussed in a later section of this unit.

Capital Budget

Capital budget is a plan reflecting the investments of the business in fixed assets and often includes amounts for large expenditure that have a long-term impact on the firm's financial position and growth. The activities that fall within the scope of capital budget mainly consists of programmes on infrastructure development, output expansion, and increase in productive resources. Since the outlay of capital budget is normally higher as compared to operating budget, they require careful planning, analysis and evaluation. Such budgets, in fact, aim to contribute maximum to the organizational goals and objectives.

Short-term Budget

Short-term budgets refer to such budgets which cover activities of the business for a period of a year or shorter. Generally, firms prefer to prepare such budgets for

NOTES

sales and cash overheads. However, such budgets can be broken down to shorter periods of six months, three months and possibly even one month. Experts generally believe that managers enjoy more flexibility by breaking down the period of budget in shorter periods. Normally, departmental executives are responsible for the preparation of short-term budgets. Various departments of the enterprise need to work in coordination for the preparation of short-term budgets as the top-level management coordinates the final budget on the basis of short-term budgets.

Long-term Budget

To meet the demands of growing business and competition, firms need to move beyond the short-range plan to look ahead for more than one year. Long-term budgets may cover periods of one, three, five and even more years depending upon the nature of the business. According to the National Association of Accountants, America, a long-term budget is *a systematic and formalized process for purposeful directing and controlling future operations towards a desired objective for periods extending beyond one year*. The responsibility for the preparation of long-term budgets generally rests with top-level management. The top-level management is generally responsible for strategic decisions concerned with growth and prosperity of business. Since the preparation of such a budget demands the study of both internal factors as well as external factors like industry competition, economic growth, social and cultural change, and technological development, it calls for strategic capabilities on the part of management.

Master Budget

The master budget sets out a firm's plan for the operations and resources expressed in financial terms for a given period. It is a summary of the budget schedules in capsule form made for the purpose of presenting in one report the highlights of the budget period. The CIMA (1991), defines it as, *The summary budget, incorporating its component functional budgets which is finally approved, adopted and employed*.

Davidson and others state, *The master budget, sometimes called the comprehensive budget is a complete blueprint of the planned operations of the firm for a period*.

Thus, the master budget is an overall budget of a firm which includes all other small departmental budgets. It is network consisting of many separate budgets that are interdependent. In fact, the master budget contains consolidated summary of all the budgets prepared by the organization. Such a budget coordinates various activities of the business, directing them towards a common goal. Few top executives of the business are supplied with copies of master budgets. Such a

budget is of no use to departmental executives. It draws the attention of the management to those issues which must require immediate attention or which must be avoided without any delays in the interest of the business.

Preparation of a Master Budget: It is a complex process that requires much time and effort by the management at all levels. It includes the preparation of a projected profit and loss account (income statement) and projected balance sheet. The preparation of master budget involves the preparation of:

- sales budget;
- production cost budget;
- cost budget;
- cash budget;
- projected profit and loss account on the basis of information collected from the above stated four steps; and
- projected balance sheet from the information available in last year's balance sheet and with the help of the steps stated above.

The format of the master budget is given in Tables 10.1 and 10.2.

Table 10.1

.... Co. Ltd.,

Master Budget

(*For the year ending as on* . . . .)

Particulars	***Previous Period Amount (₹)***	***Budgeted Period Amount (₹)***	***Particulars***	***Previous Period Amount (₹)***	***Budgeted Period Amount (₹)***
To cost of product (as per production cost budget)			By sales (as per sales budget)		
Direct material ₹			(a) x product ... units @ ₹.....		xxx
(......Units@ ₹...) xxx					
Direct wages xxx			(b) x product...... units @ ₹		xxx
Prime cost		xxx			
Factory overheads					
(a) Variable xxx					
(b) Fixed xxx		xxx			
Work cost		xxx			
Administrative, selling and distribution overheads		xxx			
To Net Profit		xxx			
		xxx			xxx

NOTES

Table 10.2
Budgeted Balance Sheet

Liabilities	*Previous Period Amount* (₹)	*Budgeted Period Amount* (₹)	*Assets*	*Previous Period Amount* (₹)	*Budgeted Period Amount* (₹)
Shareholder's Equity:			*Fixed Assets:*		
Pref. share capital			Plant & Machinery		
Equity share capital			Building		
			Furniture		
Current Liabilities:			*Current Assets*:		
Bill payable			Bill Receivable		
Sundry creditors			Sundry debtors		
Bank loan	________	________	Cash in hand and at bank	________	________
			Inventories	________	________

Subsidiary Budget

Subsidiary budgets are those budgets which show income or expenditure appropriate to or the responsibility of a particular activity of the business. They are prepared on the basis of the guidelines framed by the master budget. There may be different kinds of subsidiary budgets depending on the size, nature and policy of the concern but the following are frequently prepared:

- sales budget
- production budget
- production cost budget
- materials budget
- labour budget
- manufacturing overhead budget
- expenses budget
- plant budget
- cash budget.

10.3.1 Sales budget, Production budget and Cash budget

In this section you will discuss the three major types of budget including the sales, production and cash budgets.

Sales Budget

It is an estimate of future sales expressed in quantities and/or money. Such a budget, in fact, calls for projection of a firm's sales on a periodic basis. The preparation of an effective sales budget demands the study of both internal and external factors. The internal factors to be considered for the purpose are past activity, present and projected plant capacity, proposed management policies, financial position, sales force size, availability of materials, and promotional campaign. The external factors that must be analysed to enable managers prepare

NOTES

sales budget include extent of competition, government policies and regulations, economic conditions of the country and general trade prospectus. The management should constantly review the above-mentioned factors in order to find out the quantum of change in them and its impact on product demand.

Generally, sales budget is recognized as the key budget that leads to the preparation of all other functional budgets. The success of any commercial enterprise largely depends upon the quick turnover of its production. Against this background, every company wants to maximize its sales. However, the maximization of sales has always remained a complex problem that requires proper attention from the management. Every effort must be made to achieve sales targets. The sales budget can be broken down by:

- product lines
- geographic territories
- time span
- types of customers.

A forecast of sales on an industry-wide basis must be broken down so that it applies to a particular firm. Each firm studies its position relative to the total market and calculates its share of the market. In some areas and in certain product lines, one firm may dominate while in other areas and in other product lines, the sales may be shared by the firms in different proportions. The following techniques are used for sales forecasts:

- past trends
- sales executives opinion
- survey methods

The following illustration will further clear the idea about the preparation of sales budget.

Illustration 10.2: MAS Co. Ltd. operates two sales divisions by selling two quality cement products—White and Black in them. For the purpose of submission of sales budget to the budget committee, the following information has been made available.

Budget sales for the current year were as follows:

Product	*Division I*	*Division II*
White	800 at ₹ 100	600 at ₹ 100
Black	400 at ₹ 80	500 at ₹ 80

Actual sales for the current year were as follows:

Product	*Division I*	*Division II*
White	1,000 at ₹ 100	700 at ₹ 100
Black	600 at ₹ 80	450 at ₹ 80

NOTES

The sales division of the company has taken the following decisions at a meeting:

(i) The sales manager observed that product White is popular but underpriced. Therefore, the price of product should be increased by ₹ 20.

(ii) The product Black has less market and the main reason responsible for it is the over price of the product. However, if the price of the product is reduced by ₹ 5, it is expected to generate more demand.

On the basis of these price changes and reports from the sales force, the following estimates have been prepared by divisional sales manager:

Percentage increase in sales over current budget.

Product	Division I	Division II
White	5	20
Black	10	10

You are required to prepare a sales budget to be presented to the budget committee.

Solution:

Sales Budget
MAS Co. Ltd.

Division	Product	Budget for Future Period			Budget for Current Period			Actual Sales for Current Period		
		Qty.	Price (₹)	Value (₹)	Qty.	Price (₹)	Value (₹)	Qty.	Price (₹)	Value (₹)
I.	White	840	120	1,00,800	800	100	80,000	1,000	100	1,00,000
	Black	440	75	33,000	400	80	32,000	600	80	48,000
	Total	1,280		1,33,800	1,200		1,12,000	1,600		1,48,000
II.	White	720	120	86,400	600	100	60,000	700	100	70,000
	Black	550	75	41,250	500	80	40,000	450	80	36,000
	Total	1,270		1,27,650	1,100		1,00,000	1,150		1,06,000
Total	White	1,560	120	1,87,200	1,400	100	1,40,000	1,700	100	1,70,000
	Black	990	75	74,250	900	80	72,000	1,050	80	84,000
	Total	2,550		2,61,450	2,300		2,12,000	2,750		2,54,000

Illustration 10.3: Super National Company Ltd. has three items in its product line—EX, YEE and ZED. These products are sold in two markets—Super and Superior. The following information on the sales of these products in these markets is available:

NOTES

Product Units	Budget Sales for Current Year		Actual Sale of Current Year	
	Super Market (Unit)	Superior Market (Units)	Super Market (Unit)	Superior Market (Units)
EX	18,000	22,000	20,000	25,000
YEE	9,000	12,000	7,000	10,000
ZED	15,000	8,000	12,000	7,000

The EX product is sold at ₹ 5 per unit whereas products YEE and ZED are sold for ₹ 4 and ₹ 7 respectively, in both markets.

The research department of the company submitted the following proposals to be kept in mind while preparing sales budget:

(a) Product EX has stiff competition in future and as a result of which the sales may decline. To maintain present state of demand the price of the product may be reduced by 10 per cent.

(b) Product YEE is popular but underpriced. It is reported that if its price is increased by 25 per cent it will still find a ready market.

(c) The sale of product ZED may decline by 10 per cent due to entrance of new firms in the industry.

(d) With the help of an intensive campaign 5 per cent additional sales over the estimated sales are expected in all products in both markets except of product ZED in superior market.

The management has approved the proposal without any change. You are required to prepare a budget for sales incorporating the above proposals.

Solution:

Sales Budget
Super National Company Ltd.

Market and Product	Budget for Future Period			Budget for Current Period			Budget for Current Period		
	Qty. (Units)	Price (₹)	Value (₹)	Qty. (Units)	Price (₹)	Value (₹)	Qty. (Units)	Price (₹)	Value (₹)
Super									
EX	18,900	4.50	85,050	18,000	5.00	90,000	20,000	5.00	1,00,000
YEE	9,450	5.00	47,250	9,000	4.00	36,000	7,000	4.00	28,000
ZED	14,250	7.00	99,750	15,000	7.00	1,05,000	12,000	7.00	84,000
Total	42,600		2,32,050	42,000		2,31,000	39,000		2,12,000
Superior									
EX	23,100	4.50	1,.03,950	22,000	5.00	1,10,000	25,000	5.00	1,25,000
YEE	12,600	5.00	63,000	12,000	4.00	48,000	10,000	4.00	40,000
ZED	7,600	7.00	53,200	8,000	7.00	56,000	7,000	7.00	49,000
Total	43,300		2,20,150	42,000		2,14,000	42,000		2,14,000
Total (Summary)									
EX	42,000	4.50	1,89,000	40,000	5.00	2,00,000	45,000	5.00	2,25,000
YEE	22,050	5.00	1,10,250	21,000	4.00	84,000	17,000	4.00	68,000
ZED	21,850	7.00	1,52,950	23,000	7.00	1,61,000	19,000	7.00	1,33,000
Total	85,900		4,52,200	84,000		4,45,000	81,000		4,26,000

NOTES

Production Budget

After the preparation of sales budget, the management turns its attention to the preparation and designing of a production budget. Production budget is a component of the master budget that establishes the level of production planned for budget period. It fixes the target for the future output. In a broader sense, production budget attempts to estimate the number of units of an item of the product line that a company is planning to produce during the budgeted period. Sufficient amount of goods will have to be available to meet sales needs of the budgeted period and the quantity of inventory needed at the end of the period. A portion of these goods will already exist in the form of an opening inventory. The remainder will have to be produced. The quantity to be produced is decided after taking into consideration the following:

- Opening and closing levels of inventories; and
- Quantity required to meet projected sales.

Further, a budget executive has also to analyse the factors mentioned below to enable himself prepare the production budget:

- Maximum production capacity of the business;
- Production planning of the organization;
- Managing policy regarding produce or purchase of components;
- Available storage facilities; and
- Amount of investment required.

The production department must schedule its production in such a way so as to ensure prompt deliveries to the customers. To achieve this objective, the sales department must be closely coordinated with the production department. Neither department can plan and direct its activities in isolation. The department of sales has to depend on production from the production department and at the same time, the production department guides its production levels on the basis of sales estimates as submitted by the sales department.

A format of a detailed production budget is given as under:

.... Co. Ltd.
Production Budget
January, February and March 20xx

Particulars	***January***	***February***	***March***
Sales in quantity (as per sales budget)	xxx	xxx	xxx
Add: Desired inventory at the end	xxx	xxx	xxx
Total quantity required	xxx	xxx	xxx
Less: Stock at beginning	xxx	xxx	xxx
Quantity to be produced	xxx	xxx	xxx

NOTES

Illustration 10.4: From the following information prepare a production budget for 3 months of NICE Cement Co. Ltd.

(i) The estimated sales for the budget period as reported by sales manager are:

Division	*Types of Products*			
	White (Tonnes)	*Black (Tonnes)*	*Red (Tonnes)*	*Green (Tonnes)*
North	7,000	12,000	16,000	10,000
South	5,000	8,000	10,000	3,000

(ii) Estimated stock on June 1, 2012

Types of Product	**Tonnes**
White	1,200
Black	1,500
Red	1,800
Green	1,200

(iii) Desired closing stock on 31st August, 2012

Types of Product	**Tonnes**
White	1,500
Black	1,800
Red	1,400
Green	1,000

Solution

Production Budget for Three Months from June to August, 2012

Estimated Sales During Budget Period	*Types of Products*			
	White (Tonnes)	*Black (Tonnes)*	*Red (Tonnes)*	*Green (Tonnes)*
North	7,000	12,000	16,000	10,000
South	5,000	8,000	10,000	3,000
Total	12,000	20,000	26,000	13,000
Add: Desired stock on 31st August, 2012 (closing stock)	1,500	1,800	1,400	1,000
	13,500	21,800	27,400	14,000
Less: Estimated stock on June 1st, 2012 (opening stock)	1,200	1,500	1,800	1,200
Quantity to be produced	12,300	20,300	25,600	12,800

Production Cost Budget: It is followed by production cost budget that includes the summaries of direct material budget, direct labour budget and manufacturing overhead budget. Each of these budgets must consider the quantities to be produced as reflected in the production budget and the prices of the factors which a firm expects to prevail during the budget period.

NOTES

Cash Budget

The availability of cash in adequate quantity at proper time at a reasonable cost is essential for smooth operation of a business. The cash budget attempts to estimate cash requirements of a business well ahead of time. According to Soloman, (1968) 'the cash budget is an analysis of flow of cash in a business over a future, short or long period of time. It is a forecast of expected cash intake and outlay'. The cash budget converts all planned actions into cash inflows and cash outflows. Thus, it shows the anticipated flow of cash and the timing of receipts and disbursements based upon projected revenues and expenses. This budget is significant because it helps management in planning to avoid unnecessary idle cash balances on the one hand and avoidable expensive borrowings on the other. It indicates not only the total amount of financing required but its timing as well. The cash budget generally consists of the following two major sections, viz., receipt section and payment section.

Normally, the major source of cash receipts for any business is sales. For credit sales, accounts receivable are eventually converted into cash as debtors pay their accounts. However, in this connection, management has to estimate properly the time taken to collect outstanding accounts. At the same time, provisions must be made for discounts, returns, allowance granted and uncollectible accounts. From a study of past records and recent experience in the rate of collection, it should be possible to predict approximate receipts on accounts.

Special items such as increase in cash from sale of equipment, issuance of shares, borrowing, and so on must be considered in the estimation of cash receipts. Thus, cash receipts are expected to be generated from the following sources:

- cash sales;
- collection from debtors,
- non-operating incomes like dividend, commission, interests, and so on,
- sale proceedings from capital assets;
- share capital and debentures; and
- loans and overdrafts.

The payment section of the cash budget consists of all cash payments that are planned for the budget period. These payments will include payments for merchandise and overhead acquired or incurred for the current budget period as well as for payables on the past budget period. Payments on various accounts are not made simultaneously with the cost incurred or materials and services used. The expenditure on various items like insurance, rent and advertising are often paid in advance while payments for materials, labour and other costs of operation frequently follow acquisition and use. Capital expenditures for expansion and replacement in addition to mandatory expenditures for a variety of other purposes

such as taxes, donations, repayments of loans, dividends, and so on must be taken into account. The major items of payments are:

NOTES

- payment for various inputs like materials, labour and machinery;
- payment of loans and deposits;
- redemption of capital and debentures; and
- investments.

The difference between cash receipts and payments represents *cash overage* or *shortage*. If a shortage exists, the company will have to arrange the cash through bank loans or other financing methods. If an excess exists, funds borrowed in previous period can be repaid, or the idle funds can be temporarily invested.

How frequently cash budget should be prepared and the time intervals covered by the budget depend on the individual company's circumstances, problems and objective. However, cash budget should be broken down into time periods that are as short as feasible. Many organizations maintain cash budgets on a weekly basis and even some prefer to do it on daily basis. But firms prefer to have case budgets on a monthly basis. However, a firm might be interested to prepare a cash budget every quarter if it is considering expansion.

Cash budgets may be prepared in three ways with varying formats and appearances. However, all forms require the same estimates and result in the same forecast. The methods are

- Receipt and payment method;
- Adjusted profit and loss method; and
- Balance sheet method.

Receipt and Payment Method: This method is a line-by-line estimate of receipts and payments. A good starting point for developing the cash budget is the opening cash balance to which expected cash receipts during the budget period are added. The figure so obtained is reduced by the amount of cash payment that is planned for the budget period. The outstanding payments and receipts are excluded from cash budget as this method is based on the concept of actual cash flows rather than on their accrual. Accordingly pre-payments and pre-receipts are to be considered in the preparation of cash budget. The receipt and payment method of cash budget is demonstrated in Illustration 10.5.

Illustration 10.5: Prepare a cash budget for the first four months from the following estimated revenue and expenses:

Month	*Sales* (₹)	*Purchase* (₹)	*Labour (Wages)* (₹)	*Overhead Administrative* (₹)	*Overhead Distribution* (₹)
April	60,000	60,000	12,000	2,000	1,200
May	66,000	42,000	14,000	2,200	1,400
June	72,000	40,000	16,000	2,200	1,400
July	78,000	36,000	18,000	2,400	1,600
August	84,000	34,000	20,000	2,600	1,600

NOTES

Additional Information:

(i) Cash balances on 1st April was ₹ 35,000.

(ii) 50 per cent of sales are on credit basis which are realised in the subsequent month.

(iii) Suppliers are paid in the month following the month of supply.

(iv) Delay in payment of wages and overheads is 30 days.

(v) Dividends on investments amounting ₹ 10,000 may be received in April and July.

(vi) Company plans to purchase a machine for ₹ 60,000 for which it has to pay the consideration in three equal instalments in the month of April, June and July.

Solution:

Cash Budget
for the Period April to July

Details	*April* (₹)	*May* (₹)	*June* (₹)	*July* (₹)
A. *Balance b/d*	35,000	55,000	42,800	32,200
B. *Receipts:*				
Cash sales (50 per cent)	30,000	33,000	36,000	39,000
Debtors	—	30,000	33,000	36,000
Dividends	10,000	—	—	10,000
Total (A + B)	75,000	1,18,000	1,11,800	1,17,200
C. *Payments:*				
Creditors	—	60,000	42,000	40,000
Wages	—	12,000	14,000	16,000
Administrative overhead	—	2,000	2,200	2,200
Distribution overhead	—	1,200	1,400	1,400
Machine	20,000		20,000	20,000
Total C	20,000	75,200	79,600	79,600
Balance (A + B – C)	55,000	42,800	32,200	37,600

Adjusted Profit and Loss Method: Under this method, the profit forecast for the budget period is adjusted for non-cash transactions and for expected changes in assets and liabilities not involved in the calculation of profit. Thus, net estimated profit for the budget period is increased by the amount of no-cash transactions like depreciation, provisions, outstanding expenses, and so on, which in turn is added by capital receipts, reduction in assets and increase in liabilities to form total cash receipts. The amount so calculated is reduced by the amount resulting from payment of dividends, pre-payments, increase in assets and decrease in liabilities. The resultant figure will be the amount of cash available at the end of the budget period. The top management always prefers to use adjusted profit and loss for cash forecasting but most firms are compelled to use the line-by-line estimate to provide the detailed information needed by lower management levels for control. The essential information for the preparation of adjusted profit and loss account is

collected from profit and loss account and balance sheet. Illustration 9.8 will demonstrate the process of preparation of cash budget as per adjusted profit and loss account method.

Illustration 10.6: The following data is made available to you to prepare a cash budget under the adjusted profit and loss method:

NOTES

Balance Sheet
as on 31st March 2012

Liabilities	(₹)	*Assets*	(₹)
Share capital	2,00,000	Building	1,25,000
Debentures	75,000	Machinery	75,000
Reserves	35,000	Furniture & fixtures	55,000
Profit & loss a/c	20,000	Debtors	25,000
Creditors	60,000	Bills receivable	20,000
Bills payable	20,000	Closing stock	45,000
		Bank balances	65,000
	4,10,000		4,10,000

Projected Trading and Profit and Loss Account
for the Year Ending 31st March, 2013

Particulars	(₹)	*Particulars*	(₹)
To Opening stock	35,000	By Sales	4,20,000
To Purchases	2,20,000	By Closing stock	85,000
To Carriage	12,000		
To Gross profit c/d	2,38,000		
	5,05,000		5,05,000
To Establishment	1,00,000	By Gross Profit b/d	2,38,000
To Discount	12,000	By Commission	12,000
To Administrative Exp.	38,000	By Interest	10,000
To Distribution Exp.	22,000		
To Depreciation on machinery	16,000		
To Advertisement	18,000		
To Net profit c/d	54,000		
	2,60,000		2,60,000
To Dividends	22,000	By Balance of profit from last year	20,000
To Balance c/d	52,000	By Net profit b/d	54,000
	74,000		74,000

The following closing balance of certain items as on 31st March 2013 are also given as additional information:

Share capital	₹ 2,40,000
Debentures	₹ 90,000
Building	₹ 1,40,000
Machinery	₹ 80,000
Bills payable	₹ 25,000

Solution:

NOTES

Cash Budget

	(₹)	(₹)
Cash balances as on 1st April, 2012		65,000
Additions to cash:		
Net profit of the year	54,000	
Depreciation	16,000	
Issue of share capital	40,000	
Issue of debentures	15,000	
Increase in B/P	5,000	1,30,000
Cash available		1,95,000
Deduction of cash:		
Dividends paid	22,000	
Purchase of buildings	15,000	
Purchase of machinery	5,000	
Increase in stock	40,000	82,000
Closing balance as on 31st March, 2013		1,13,000

Balance Sheet Method: Under this method the cash balances at the end is computed with the help of a projected balance sheet. The projected balance sheet begins with the current balance sheet and the same is adjusted in accordance with the data contained in the other budgets. All the balance sheet items except cash balances are adjusted in the light of changes that might take place between current balance sheet and the projected balance sheet. The difference between projected assets and projected liabilities represents cash balance.

Check Your Progress

4. What is the functional classification of budgets?
5. Define operating budget.
6. Name the key budget that leads to preparation of all other functional budgets.
7. Mention the two major sections of a cash budget.

10.4 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. No useful budget can be prepared without a complete knowledge of the objectives, nature and policies of the business.

2. A budgetary control consists of:
   - Preparation of budgets for major activities of the business;
   - Measurement and comparison of actual results with budgeted targets;
   - Computation of deviation, if any; and
   - Revision of budget, if required.
3. To eliminate the danger of over capitalization and under capitalization by determining the total capital requirements of a business firm with the help of production budget and working capital estimates.
4. The functional classification of budgets is:
   - Master budget
   - Subsidiary budget
5. Operating budget is a plan of the expected revenues and expenses from normal operations and activities to be carried out by the organization in the future.
6. Sales budget is recognized as the key budget that leads to the preparation of all other functional budgets.
7. The cash budget generally consists of the following two major sections, viz., receipt section and payment section.

10.5 SUMMARY

- Budget is generally recognized as a plan of action to be pursued by an organization during a defined period of time in order to achieve its objectives. It is a statement of anticipated results expressed either in financial or non-financial terms.
- While preparing a budget, certain factors must be considered. This includes complete knowledge of objectives, determination of the duration of the budget, availability of competent and experienced budget managers, ensuring the making of elastic and flexible budgets, realistic aims.
- Budgetary control is a systematic process designed to plan and control the major activities of a firm's business through budgets prepared in advance with an objective to ensure effective use of resources.
- Budgetary control consists of preparation of budgets for major activities of the business; measurement and comparison of actual results with budgeted targets, computation of deviation and revision of budget.
- The objectives of budgetary control includes providing accurate information to the managers, helping the control of costs, eliminating the danger of over capitalization and under capitalization, locating deficiencies in the production system and promoting research and developmental activities.

NOTES

- Benefits of budgetary control includes help in the coordinating of planning of the executive functions, motivating the executives, self-evaluation of managers, predetermination of benefits and costs, conserving resources, and increase of participation of employees etc.
- Limitations of budgetary control consists of doubtful data due to approximation and personal judgements, high costs, over consumption of time, slow adaptation to the changing business conditions etc.
- Different authorities have given different classifications of budgets. Some classify them on the basis of functions involved, period covered, nature of transactions while others classify them according to activity levels.
- Budgets according to activity levels include fixed budget and flexible budget. Classification on the basis of nature of transactions includes operating budget and capital budget. Period classification consists of long term and short term budgets. Functional classification includes master and subsidiary budget.
- The preparation of master budget involves the preparation of sales budget, production of cost budget, cost budget, cash budget, projected profit and loss account on the basis of information collected from the above stated four steps; and projected balance sheet from the information available in last year's balance sheet and with the help of the steps stated above.
- A subsidiary budget requires the preparation of sales budget, cash budget, production cost budget, materials budget, labour budget, manufacturing overhead budget, expenses budget, and plant budget.

10.6 KEY WORDS

- **Budget:** It is a plan of action to be pursued by an organization during a defined period of time in order to achieve its objectives. It is a statement of anticipated results expressed either in financial or non-financial terms.
- **Budgetary control:** It is a systematic process designed to plan and control the major activities of a firm's business through budgets prepared in advance with an objective to ensure effective use of resources.
- **Budget centre:** It is a section of the organization of an undertaking defined for the purpose of budgetary control.

10.7 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. What are the considerations to be kept in mind while preparing budgets?
2. List the objectives of budgetary control.

3. Write a short note on the essential characteristics of a good budgetary control.
4. Briefly mention the prerequisites for a good budgetary control.

Long-Answer Questions

NOTES

1. Discuss the benefits and limitation of a budgetary control system.
2. Describe major classifications of budgets.
3. Explain the ways in which a cash budget is prepared.
4. Chennai Engineering Co. Ltd manufactures two products *X* and *Y*. An estimate of number of units expected to be sold in the first seven months of 2018 is given below.

	Product X	*Product Y*
January	500	1,400
February	600	1,400
March	800	1,200
April	1,000	1,000
May	1,200	800
June	1,200	800
July	1,000	900

It is anticipated that:

(*a*) there will be no work-in-progress at the end of any month:

(*b*) finished units equal to half the anticipated sales for the next month will be in stock at the end of each month (including December 2017) The budgeted production and production costs for the year ending 31 December 2018 are as follows:

	Product X	*Product Y*
	₹	₹
Production (units)	11,000	12,000
Direct materials per unit	12	19
Direct wages per unit	5	7
Other manufacturing charges		
apportionable to each type of product	33,000	48,000

You are required to prepare:

(*a*) A production budget showing the number of units to be manufactured each month.

(*b*) A summarized production cost budget for the 6-month period—January to June 2018.

NOTES

5. The following information relates to JBK Auto Ltd.

Month	*Wage incurred* ₹	*Materials* ₹	*Purchased Overheads* ₹	*Sales* ₹
February	6,000	20,000	10,000	30,000
March	8,000	30,000	12,000	40,000
April	10,000	25,000	16,000	60,000
May	9,000	35,000	14,000	50,000
June	12,000	30,000	18,000	70,000
July	10,000	25,000	16,000	60,000
August	9,000	25,000	18,000	50,000
September	9,000	30,000	14,000	50,000

(i) It is expected that the cash balance on 31st May will be ₹22,000.

(ii) The waves may be assumed to be paid within the month they are incurred.

(iii) It is company policy to pay creditors for materials three months after receipt.

(iv) Debtors are expected to pay two months after delivery.

(v) Included in the overhead figure is ₹2,000 per month which represents depreciation on two cars and one delivery van.

(vi) There is a one-month delay in paying the overhead expenses.

(vii) 10% of the monthly sales are for cash and 90% are sold on credit.

(viii) A commission of 5% is paid to agents on all the sales on credit but this is not paid until the month following the sales to which it relates, the expense is not included in the overhead figures shown.

(ix) It is intended to repay a loan of ₹25,000 on 30th June.

(x) Delivery is expected in July of a new machine costing ₹45,000 of which ₹15,000 will be paid on delivery and ₹15,000 in each of the following months.

(xi) Assume that overdraft facilities are available if required.

You are required to prepare a cash budget for each of the three months of June, July August.

10.8 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice*, 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management*, 4th edition. New Delhi: Vikas Publishing House.

UNIT 11 PREPARATION OF DIFFERENT BUDGETS

NOTES

Structure

11.0 INTRODUCTION

The success of any business depends on the right combination of several different factors. Planning is at the heart of running any business and crucial to efficient planning is the concept of management accounting. Catered specifically for the relevant departmental heads and decision makers of the company, management accounting provides timely reports for specific departments with crucial information to help take important business operations. These are targeted only for the internal staff of the company, so that changes can be made quickly and the specific department is on track with its target and ahead of its problems. Since, it is meant for internal use only, there is no specific format to be followed and so the companies have the freedom to make use of the tools of management accounting for their unique needs. There are different tools which figure in the process of management accounting. Budgeting and budgetary control is one of the most crucial forward looking tool used for understanding the finances of the operations that go on in the company. A right budget sets the right start for the activities to go on in the company. An understanding of management accounting will help the management of a company to undertake its activities with minimal wastage and maximum profits.

You have already learnt the basics of budgeting and budgeting control in the previous unit. In this unit, the discussion will continue on to the preparation of certain types of budgets.

11.1 OBJECTIVES

NOTES

After going through this unit, you will be able to:

- Describe the preparation of materials purchase and other budgets
- Explain fixed and flexible budgeting
- Examine the concept of master budget
- Discuss zero-based and performance budgeting

11.2 MATERIALS PURCHASE AND OTHER BUDGETS

In Unit 10, you were introduced to three major types of budgets including sales, production and cash budgets. In this section, certain other types of budgets including materials purchase, capital expenditure, etc. are discussed.

Raw Material Budget

This budget shows the estimated quantities of all the raw materials and components needed for production demanded by the production budget. Raw material budget serves the following purposes:

(*a*) It assists purchasing department in planning the purchases

(*b*) It helps in the preparation of purchase budget

(*c*) It provides data for raw material control.

It should be noted that raw material budget generally deals with only the direct materials. Indirect materials and supplies are included in the overhead cost budget.

Purchase or Materials Purchase

Careful planning of purchases offers one of the most significant areas of cost saving in many companies. The purchase manager should be assigned the direct responsibility for preparing a detailed plan of purchases for the budget period and for submitting the plan in the form of a purchase budget.

The purchase budget provides details of the purchases which are planned to be made during the period to meet the needs of the business. It indicates:

(*a*) The quantities of each type of raw material and other items to be purchased;

(*b*) The timing of purchases;

(*c*) The estimated cost of material purchases.

Factors: In preparing a purchase budget, a number of factors must be considered, including the following:

(*a*) Opening and closing stocks to be maintained, as they will affect material requirements

(*b*) Maximum and minimum stock quantities

(*c*) Economic order quantities

(*d*) Financial resources available

(*e*) Purchase orders placed before the budget period against which supplies will be received during the period under consideration

(*f*) Policy of the management regarding materials or components to be manufactured within the business, as distinct from those purchased from outside.

Purposes: The main purposes of a purchase budget are as follows:

(*a*) To enable the purchasing department to plan its purchases and enter into long-term contracts, where advantageous.

(*b*) To record the material prices on which the plan represented by the budget is based.

(*c*) To facilitate the management of finance of the business by defining the cash requirements in respect of the budget period and for shorter runs.

The purchase budget differs from the raw material budget in that purchase budget specifies both quantities and rupee costs, whereas raw material budget is usually limited to quantities only. *Secondly,* purchase budget includes direct and indirect materials, finished goods for resale, services like electricity and gas, etc. while raw material budget includes only direct material requirements.

Illustration 11.1: The sales manager of Mahindra & Co. Ltd reports that next year he expects to sell 50,000 units of a certain product.

The production manager consults the storekeeper and casts his figures as follows: Two kinds of raw materials *A* and *B* are required for manufacturing the product. Each unit of the product requires 2 kgs of *A* and 3 kgs of *B*. The estimated opening balances at the commencement of the next year are—Finished Product, 10,000 units; *A*, 12,000 kgs; *B* 15,000 kgs. The desirable closing balances at the end of the next year are: Finished product, 14,000 units; *A*, 13,000 kgs; *B*, 16,000 kgs.

Draw up a Materials Purchases Budget for the next year.

Solution:

As production quantity during the year is not given, it is calculated as under:

	Sales during the year	50,000 units
Add:	Desired stock at the end of next year	14,000 units
	Total	64,000 units
Less:	Expected stock at the beginning of the next year	10,000 units
	Estimated production	54,000 units

Purchases Budget
for the period ....

	Item	Material A kgs	Material B kgs
	Consumption during the year:		
	A—54,000 units @ 2 kg per unit	1,08,000	—
	B—54,000 units @ 3 kg per unit	—	1,62,000
Add:	Desired stock at the end of next year	13,000	16,000
		1,21,000	1,78,000
Less:	Expected stock at the commencement of next year	12,000	15,000
	Quantities of materials to be purchased	1,09,000	1,63,000

NOTES

Labour Budget

Labour cost is classified into direct and indirect. Some companies prepare a labour budget that includes both direct and indirect labour, while others include only direct labour cost and include the indirect labour in the overhead cost budget.

The labour budget represents the forecast of labour requirements to meet the demands of the company during the budget period. This budget must be linked with production budget and production cost budget. The method of preparing labour budget is like this. The standard direct labour hours of each grade of labour required for each unit of output and standard wage rate for each grade of labour are ascertained. Multiplication of units of finished goods to be produced by the labour cost per unit gives the direct labour cost. The indirect labour is normally a fixed amount, so should be easy to calculate in total for the period.

Purposes: The labour budget serves the following purposes:

(*a*) To estimate the labour cost of production.

(*b*) To determine the direct labour required in terms of labour hours and hence the number and grade of workers required to meet the production requirements.

(*c*) To provide the personnel department with personnel requirements so that it may plan recruitment activities.

(*d*) To provide data for determination of cash requirements for payment of wages.

(*e*) To provide data for managerial control of labour cost.

Production Overheads Budget

After budgeting of material and labour cost, next logical step is to prepare a budget for production overheads. The production overheads budget represents the forecast of all the production overheads (fixed, variable and semi-variable) to be incurred during the budget period. The fact that overheads include many dissimilar types of expenses creates considerable problems in:

(*a*) The allocation of production overheads to products manufactured; and

(*b*) Control of production overheads.

NOTES

The production overheads budget involves the preparation of overheads budgets for each department of the factory as it is desirable to have estimates of manufacturing overheads prepared by those individuals who have the responsibility for incurring them. The budget expenses for each sub-period during the budget period should be indicated and the classification of expenses should be the same as used by the accounting department. The budgeted overhead costs of service departments are totalled and apportioned to production departments according to the services received by each such production department. The budgeted overhead costs of service departments are totalled and apportioned to production departments according to the services received by each such production department.

Factors: The factors to be considered in preparing this budget are as follows:

(*a*) The classification of all overhead costs into fixed and variable elements. In the case of semi-variable items, the degree of variability should be ascertained. The level of output at which fixed costs change also be determined.

(*b*) The level of activity likely to be achieved during the budget period, like units of output, labour hours, etc.

(*c*) Policy of management regarding matters, like overtime work, number of shifts to be worked, depreciation, replacement of hand labour by machines, etc.

(*d*) Individual items of cost incurred in the past.

Selling and Distribution Cost Budget

This is closely related to sales budget and represents the forecast of all costs incurred in selling and distributing the company's products during the budget period. As a general rule, the sales budget and the selling and distribution cost budgets are prepared simultaneously, since each has a definite impact on the other.

The sales manager is responsible for selling and distribution cost budget. He prepares this budget with the help of heads of sub-divisions of the sales department. Some companies prepare a separate advertising budget, particularly when spendings on advertising are quite heavy.

Administration Cost Budget

This budget represents forecast of all administration expenses, like directors' fees, managing director's salary, office lighting, heating and air conditioning, etc. Most of these expenses are fixed, so should not be too difficult to forecast.

Capital Expenditure Budget

This budget represents the expenditure on all fixed assets during the budget period. It includes such items as new buildings, machinery, land and intangible items like patents, etc.

NOTES

Special Features: The capital expenditure budget has certain characteristic features which distinguish it from other functional budgets. These are:

(*a*) Capital expenditure budget deals with items not directly related to profit and loss account. Expenses related to capital expenditure such as depreciation, repairs and maintenance, etc., are, however, correlated to this budget and they are included in overheads budgets

(*b*) Capital expenditure is frequently planned a number of year in advance, perhaps five to ten years, in which case it is broken down into convenient periods, like years or months. As compared to this, other functional budgets are normally prepared for a shorter period, say, one year

(*c*) This budget involves large amount of expenditure which needs top management approval. The capital expenditure budget is, therefore, subject to a strict management control.

Purposes: The following are the objectives of capital expenditure budget:

(*a*) To enable the company to establish a system of priorities in expenditure

(*b*) To correct capacity imbalances

(*c*) To provide a tool for controlling capital expenditure

(*d*) To make proper financial provision to meet planned expenditure

(*e*) To provide budgets for depreciation and maintenance costs for inclusion in the departmental expense budgets.

11.3 FIXED AND FLEXIBLE BUDGETING

You have already learnt in Unit 10 that based on level of activity or capacity utilization, budgets are classified into fixed budget and flexible budget. Let's recapitulate the concept with examples.

Fixed Budget

A fixed budget is one which is prepared keeping in mind one level of output. It is defined as a budget *'which is designed to remain unchanged irrespective of the level of activity attained.'* If actual output differs from budgeted level of output, variances will arise. Fixed budget is prepared on the assumption that output and sales can be estimated with a fair degree of accuracy. This means that in those situations where sales and output cannot be accurately estimated, fixed budget does not suit.

Flexible Budget

In contrast to a fixed budget, a flexible budget is one '*which is designed to change in relation to the level of activity attained.'* The underlying principle of flexible budget is that a budget is of little use unless cost and revenue are related to the actual volume of production. Flexible budgeting has been developed with the objective of

changing the budget figures to correspond with the actual output achieved. Thus a budget might be prepared for various levels of activity, say, 70 per cent, 80 per cent, 90 per cent and 100 per cent capacity utilization. Then whatever the level of output actually reached, it can be compared with an appropriate level.

Flexible budgets are prepared in those companies where it is extremely difficult to forecast output and sales with accuracy. Such a situation may arise in the following cases:

1. Where nature of business is such that sales are difficult to predict, *e.g.*, demand for luxury goods is quite unpredictable.
2. Where sales are affected by weather conditions, *e.g.*, soft drink industry, woollen garments, etc.
3. Where sales are affected by changes in fashion, *e.g.*, readymade garments.
4. Where company frequently introduces new products.
5. Where large part of output is intended for export.

Uses of Flexible Budgets: The figures in flexible budgets are adaptable to any given set of operating conditions. They are, therefore, more realistic than a fixed budget which is true only in one set of operating conditions.

Flexible budgets are also useful from control point of view. Actual performance of an executive should be compared with what he should have achieved in the actual circumstances and not with what he should have achieved under quite different circumstances.

In brief, flexible budgets are more realistic, practical and useful. Fixed budgets, on the other hand, have a limited application and are suited only for items like fixed costs.

Distinction between Fixed and Flexible Budgets

The main points of distinction between the two are as follows:

1. Fixed budget assumes static business conditions whereas flexible budget is based on the assumption of changing business conditions.
2. Fixed budget is prepared for only one level of activity but flexible budgets may be prepared for different capacity levels or for any level of activity.
3. Fixed budget figures are not changed when actual level of activity changes. But in flexible budgets, the figures are adjusted according to the actual level of activity attained.
4. When actual level of activity differs from budgeted level of activity, then in fixed budgets meaningful comparison between actual and budget figures is not possible. But in flexible budgets, such comparisons are quite meaningful.
5. Under changing business environments, fixed budgets have very limited use for control. But flexible budgets are very useful for cost control and performance evaluation under changing business environments.

NOTES

Preparation of Flexible Budgets

The preparation of flexible budgets necessitates the analysis of all costs into fixed and variable components. This analysis, of course, not peculiar to flexible budgeting, is more important in flexible budgeting than in fixed budgeting. This is so because in flexible budgeting, varying levels of output are considered and each class of overhead will be different for each level. In flexible budgeting, a series of budgets are prepared for every major level of activity so that whatever that actual level of output, it can be compared with appropriate budget or can be interpolated between budgets of the activity levels on either side. For example, budgets may be prepared for, say, 60 per cent, 70 per cent, 80 per cent, 90 per cent and 100 per cent levels of activity. If the actual level of activity is 85 per cent, then the budget allowance for 85 per cent activity should be computed.

While computing fixed cost at various levels, it is to be noted that fixed cost in total amount remains unchanged at various levels of activity. However, fixed cost per unit decreases when level of output increases and vice versa, *i.e.*, fixed cost per unit increases when level of activity decreases.

Regarding the behaviour of variable costs, it is important to note that total variable cost increases in proportion to increase in the level of activity and vice versa. However, variable cost per unit does not change with the change in level of activity.

Semi-variable cost should be separated into fixed and variable components. Fixed component of the semi-variable cost will not change between levels but variable part of the semi-variable cost will change in the proportion of level of activity. This is explained in the following Illustrations.

Illustration 11.2: Draw up a flexible budget for overhead expenses on the basis of the following data and determine the overhead rates at 70%, 80% and 90% plant capacity.

	At 80% capacity
	₹
Variable overheads:	
Indirect labour	12,000
Stores including spares	4,000
Semi-variable overheads:	
Power (30% fixed, 70% variable)	20,000
Repairs and maintenance (60% fixed, 40% variable)	2,000
Fixed overheads:	
Depreciation	11,000
Insurance	3,000
Salaries	10,000
Total overheads	62,000
Estimated direct labour hours	1,24,000 hrs

(*ICWA Inter*)

NOTES

Solution:

Flexible Budget
for the period ....

		At 70% capacity	At 80% capacity	At 90% capacity
Variable overheads:		₹	₹	₹
Indirect labour		10,500	12,000	13,500
Stores including spares		3,500	4,000	4,500
Semi-variable overheads:				
Power:	Fixed	6,000	6,000	6,000
	Variable	12,250	14,000	15,750
Repairs and Maintenance:				
	Fixed	1,200	1,200	1,200
	Variable	700	800	900
Fixed overheads:				
Depreciation		11,000	11,000	11,000
Insurance		3,000	3,000	3,000
Salaries		10,000	10,000	10,000
(A) Total overheads		58,150	62,000	65,850
(B) Estimated direct labour hours		1,08,500	1,24,000	1,39,500
Direct labour hour rate (A ÷ B)		₹0.536	0.500	0.472

Working Notes:

1. Indirect labour cost at 70% $= 12{,}000 \times \frac{70}{80}$ = ₹10,500

   at 90% $= 12{,}000 \times \frac{90}{80}$ = ₹13,500

   Similar calculation can be made for other variable items, *i.e.*, stores.

2. Power – Fixed = ₹6,000, Variable = ₹14,000.

   Variable power at 70% $= 14{,}000 \times \frac{70}{80}$ = ₹12,250

   at 90% $= 14{,}000 \times \frac{90}{80}$ = ₹15,750

   Similar calculations can be made for repairs and maintenance.

3. Direct labour hours at 70% $= 1{,}24{,}000 \times \frac{70}{80}$ = 1,08,500

   at 90% $= 1{,}24{,}000 \times \frac{90}{80}$ = 1,39,500

Illustration 11.3: The following is the expenses budgeted for production of 10,000 units in a factory:

	₹ per unit
Materials	70
Labour	25
Variable overheads	20
Fixed overheads (₹1,00,000)	10
Variable expenses (direct)	5
Selling expenses (10% fixed)	13

Distribution expenses (20% fixed)	7
Administration expenses (₹50,000)	5
Total	155

Prepare a budget for the production of (*a*) 8,000 units, and (*b*) 6,000 units. Assume that administration expenses are rigid for all levels of production.

NOTES

Solution:

Flexible Budget
for the period.....

	6,000 units		*8,000 units*		*10,000 units*	
	Per unit ₹	*Total* ₹	*Per unit* ₹	*Total* ₹	*Per unit* ₹	*Total* ₹
Materials	70	4,20,000	70	5,60,000	70	7,00,000
Labour	25	1,50,000	25	2,00,000	25	2,50,000
Direct exp. (variable)	5	30,000	5	40,000	5	50,000
Variable overheads	20	1,20,000	20	1,60,000	20	2,00,000
Fixed overheads	16.67	1,00,000	12.50	1,00,000	10	1,00,000
Selling exp: Fixed	2.17	13,000	1.63	13,000	1.30	13,000
	Variable	11.70	70,200	11.70	93,600	11.70
1,17,000						
Distribution expenses:						
	Fixed	2.33	14,000	1.75	14,000	1.40
14,000						
	Variable	5.60	33,600	5.60	44,800	5.60
56,000						
Adm. exp.: Fixed	8.33	50,000	6.25	50,000	5.00	50,000
Total Cost	166.80	10,00,800	159.42	12,75,400	155.00	15,50,000

Notes:

1. Material, labour, direct expenses and variable overheads are variable costs and do not change per unit. Total amount changes in proportion to number of units produced.
2. Fixed overhead total amount remains at ₹1,00,000 at all levels of output. Per unit fixed overhead cost is ₹ 1,00,000 divided by the number of units produced.
3. Adm. expenses are also fixed. It is calculated in the same manner as fixed overheads.
4. Selling expenses are 10% fixed when output is 10,000 units, *i.e.*, ₹13,000 (₹1.30 × 10,000 units). Variable selling expenses per unit are 90% of ₹13, *i.e.*, ₹11.70. Total fixed cost of ₹13,000 remains the same at each level and per unit is calculated by dividing ₹13,000 by the number of units at each level. Variable selling expense per unit is ₹11.70 which remains the same at each level. Total variable selling expenses are calculated by multiplying ₹11.70 by the number of units at each activity level.
5. Distribution expenses are calculated in the same way as selling expenses.

In the aforementioned flexible budget, the following important points should be noted:

1. Total fixed costs for each level remains unchanged.
2. Per unit fixed cost decreases when level of output increases.
3. Total variable cost increases in proportion to increase in the level of output.
4. Per unit variable cost remains unchanged at each level.

NOTES

Check Your Progress

1. What is the difference between purchase and raw material budget?
2. What does administration cost budget represent?
3. State the underlying principle of flexible budget.

11.4 MASTER BUDGET

When all the functional budgets have been prepared, these are summarized into what is known as a master budget. Thus a master budget is a consolidated summary of all the functional budgets. According to CIMA, London, *'master budget is a summary budget incorporating its component functional budgets and which is finally approved, adopted and employed.'*

A master budget has two parts (*i*) *operating budget, i.e.,* budgeted profit and loss account, and (*ii*) *financial budget, i.e.,* budgeted balance sheet. Thus, a projected profit and loss account and a balance sheet together constitute a master budget.

The master budget is prepared by the budget director (or budget officer) and is presented to the budget committee for approval. If approved, it is submitted to the Board of Directors for final approval. The Board may make certain amendments/alterations before it is finally approved.

Illustration 11.4: Glass Manufacturing Company requires you to present the budget for the next year from the following information:

Sales:	
Toughened Glass	₹6,00,000
Bent Glass	₹2,00,000
Direct material cost	60% of sales
Direct wages	20 workers @ ₹150 per month
Factory overheads:	
Indirect labour —	
Works manager	₹500 per month
Foreman	₹400 per month
Stores and spares	2.5% on sales
Depreciation on machinery	₹12,600
Light and power	₹3,000
Repairs and maintenance	₹8,000
Other sundries	10% on direct wages
Administration, selling and distribution expenses	₹36,000 per year

Solution:

Master Budget
for the year ending....

				₹
Sales:				
	Toughened Glass			6,00,000
	Bent Glass			2,00,000
	Total Sales			8,00,000
Less:	Direct materials (60% of ₹8,00,000)		4,80,000	
	Direct wages (20 × 150 × 12 months)		36,000	
	Prime Cost		5,16,000	
Fixed Factory Overheads:				
	Works manager's salary (500 × 12)	6,000		
	Foreman's salary (400 × 12)	4,800		
	Depreciation	12,600		
	Light and power	3,000	26,400	
Variable Factory Overheads:				
	Stores and spares	20,000		
	Repairs and maintenance	8,000		
	Sundry expenses	3,600	31,600	
	Works Cost			5,74,000
	Gross Profit			2,26,000
Less:	Adm., selling and dist. expenses			36,000
	Net Profit			1,90,000

NOTES

11.5 ZERO-BASED BUDGETING AND PERFORMANCE BUDGETING

ZBB is a recent development in the area of management control system and is steadily gaining importance in the business world. Before preparing a budget, a base is determined from which the budget process begins. Quite often current year's budget is taken as the base or the starting point for preparing the next year's budget. The figures in the base are changed as per the plan for the next year. This approach of preparing a budget is called *incremental budgeting* since the budget process is concerned mainly with the increases or changes in operations that are likely to occur during the budget period. For example, sales of the current year's budget may be taken as the base and next year's budget for sales will be current year's sales plus an allowance for price increases and expected changes in sales volumes. The main drawback of this approach is that it perpetuates the past inefficiencies.

Zero Base Budgeting or Zero-based Budgeting (ZBB) is an alternative to incremental budgeting. ZBB was introduced at Texas Instruments in USA in 1969, by Peter Phyrr, who is known as the father of ZBB. It is not based on incremental

approach and previous year's figures are not taken as the base for preparing next year's budget. Instead, the budget figures are developed with zero as the base, which means that a budget will be prepared as if it is being prepared for a new company for the first time.

NOTES

Peter Phyrr has defined ZBB as *'a planning and budgeting process which requires each manager to justify his entire budget request in detail from scratch* (*hence zero base*). *Each manager states why he should spend any money at all. This approach requires that all activities be identified as decision packages which will be evaluated by systematic analysis ranked in order of importance.'*

According to CIMA, London, ZBB is defined as *'a method of budgeting whereby all activities are revaluated each time a budget is set. Discrete levels of each activity are valued and a combination chosen to match funds available.'*

In simple words, ZBB is a system whereby each budget item, regardless of whether it is new or existing, must be justified in its entirety each time a new budget is prepared. It is a formalized system of budgeting for the activities of an enterprise as if each activity were being performed for the first time, *i.e.,* from zero base.

The novel part of the ZBB is the requirement that the budgeting process starts at zero with all expenditures to be completely justified. This contrasts with the usual approach in which a certain level of expenditure is allowed as a starting point and the budgeting process focuses on requests for incremental expenditures.

In ZBB, budget requests for appropriation are accepted on the basis of cost/benefit approach which ensures value for money. It questions long standing assumptions and systematically examines and perhaps abandons any unproductive projects. This means that those of the activities which are of no value find no place in the forthcoming budget even though these might have been an integral part of the past budget prepared under the traditional approach. ZBB in a way tries to locate those activities which are not essential.

Main Features of Zero Base Budgeting (ZBB)

The main features of ZBB are as under:

1. All budget items, both old and newly proposed, are considered totally afresh
2. Amount to be spent on each budget item is to be totally justified
3. A detailed cost benefit analysis of each budget programme is undertaken and each programme has to compete for scarce resources
4. Departmental objectives are linked to corporate goals
5. The main stress in not on *'how much'* a department will spend but on *'why'* it needs to spend
6. Managers at all levels participate in ZBB process and they have corresponding accountabilities.

NOTES

ZBB is now-a-days widely used. In fact, when Jimmy Carter became the President of USA, he directed that all federal government agencies adopt ZBB. On a review of literature on the use of ZBB, it is found that in many organizations, ZBB has led to a considerable improvement in the budget process. But at the same time, in many organizations it has not proved successful.

Advantages: The main advantages of ZBB are:

1. In ZBB, all activities included in the budget are justified on cost benefit considerations which promote more effective allocation of resources.
2. ZBB discards the attitude of accepting the current position in favour of an attitude of questioning and challenging each item of budget.
3. In the course of ZBB process, inefficient and loss-making operations are identified and may be removed.
4. It adds psychological push to employees to avoid wasteful expenditure.
5. It is an educational process and can promote a management team of talented and skillful people who tend to promptly respond to changes in the business environments.
6. Cost behaviour patterns are more closely examined through ZBB.
7. Deliberately inflated budget requests get automatically weeded out in the ZBB process.

Disadvantages: Despite being a useful technique, ZBB suffers from the following disadvantages:

1. ZBB leads to an enormous increase in paperwork and results in high cost of preparing budgets every year.
2. Managers may resist new ideas and changes. They may feel threatened by ZBB because all expenditures are questioned and need to be justified.
3. In ZBB, there is danger of emphasising short-term gains at the expense of long-term benefits.
4. It has a tendency to regard any activity not foreseen and sanctioned in the most recent ZBB as illegitimate.
5. For introducing ZBB, managers need to be given proper training and education regarding this new concept, its pros and cons and implementation.
6. It may not always be easy to properly rank decision packages and this may give rise to conflicts.

Performance Budgeting

Performance budgeting is also a recent development which tries to overcome the limitations of traditional budgeting. In traditional system of budgeting, as used in business enterprises and government departments, the main defect is that the control of performance in terms of physical units and the related costs is not achieved.

NOTES

This is because in such budgeting, money concept is given more importance. Performance budgeting is a relatively new concept which focuses on functions, programmes and activities.

In other words, in case of traditional budgeting, both input and output are mostly measured in monetary units while performance budgeting lays emphasis on achievement of physical targets. Performance budgets are established in such a manner that each item of expenditure related to a specific responsibility centre is closely linked with the performance of that centre. Thus performance budgeting lays stress on activities and programmes. It tries to answer questions like—what is to be achieved? How is it to be achieved? When is it to be achieved? etc.

The Government of India has now decided to introduce performance budgeting in all its departments in a phased manner. An example of performance budgeting in government system of accounting may be that generally expenditure is classified under the heads like pay and allowances, transport, repairs and maintenance, etc. In performance budgeting, the classification of expenditure may be setting up of a steel mill, construction of a railway station, computerization of railway booking system, purchase of an aircraft carrier, etc. and other physical targets. When work on these activities is started, funds are obtained against these physical targets. Reports are then prepared for any under-spending or over-spending which are then analysed for corrective action to be taken.

Check Your Progress

4. Mention the two parts of the master budget.
5. What is the novel part of the ZBB in contrast with the usual approach?
6. State the focus of performance budgeting.

11.6 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. The purchase budget differs from the raw material budget in that purchase budget specifies both quantities and rupee costs, whereas raw material budget is usually limited to quantities only.
2. Administration cost budget represents forecast of all administration expenses, like director's fees, managing director's salary, office lighting, heating and air condition, etc.
3. The underlying principle of flexible budget is that a budget is of little use unless cost and revenue are related to the actual volume of production. Flexible budgeting has been developed with the objective of changing the budget figures to correspond with the actual output achieved.

4. A master budget has two parts (i) operating budget, i.e., budgeted profit and loss account, and (ii) financial budget, i.e., budgeted balance sheet.
5. The novel part of the ZBB is the requirement that the budgeting process starts at zero with all expenditures to be completely justified. This contrasts with the usual approach in which a certain level of expenditure is allowed as a starting point and the budgeting process focuses on request for incremental expenditures.
6. Performance budgeting focuses on functions, programmes and activities.

11.7 SUMMARY

- Careful planning of purchases offers one of the most significant areas of cost saving in many companies.
- The purchase budget provides details of the purchases which are planned to be made during the period to meet the needs of the business.
- The labour budget represents the forecast of labour requirements to meet the demands of the company during the budget period.
- The production overheads budget represents the forecast of all the production overheads (fixed, variable and semi-variable) to be incurred during the budget period.
- Capital Expenditure budget represents the expenditure on all fixed assets during the budget period. It includes such items as new buildings, machinery, land and intangible items like patents, etc.
- Based on level of activity or capacity utilization, budgets are classified into fixed budget and flexible budget.
- A fixed budget is one which is prepared keeping in mind one level of output. It is defined as a budget 'which is designed to remain unchanged irrespective of the level of activity attained.' In contrast to a fixed budget, a flexible budget is one 'which is designed to change in relation to the level of activity attained.'
- Zero base budgeting (ZBB) is a method of budgeting whereby all activities are revaluated each time a budget is set. The novel part of the ZBB is that the budgeting process starts with zero as the base, with all budget items to be justified as is done in the case of a new company.
- Performance budgeting is a relatively new concept which focuses on functions, programmes and activities as it lays emphasis on achievement of physical targets.

NOTES

11.8 KEY WORDS

- **Fixed budget:** It is a budget which is prepared keeping in mind one level of output.
- **Flexible budget:** It is a budget 'which is designed to change in relation to the level of activity attained.'
- **Zero based budgeting**: It is a method of budgeting whereby all activities are revaluated each time a budget is set.
- **Performance budgeting:** It is a relatively new concept which focuses on functions, programmes and activities as it lays emphasis on achievement of physical targets.

11.9 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. List the purposes of preparing raw material budget.
2. Write short note on labour and production overheads budget.
3. Mention the features of capital expenditure budget.
4. Differentiate between fixed and flexible budgets.
5. What is a master budget?
6. Write a short note on performance budgeting.

Long-Answer Questions

1. How is a materials purchase budget prepared?
2. Explain the uses and preparation of flexible budgets.
3. Examine features, advantages and disadvantages of zero base budgeting.
4. The following data are available in a manufacturing company for a yearly period:

Fixed expenses:	*₹ lakh*
Wages and salaries	9.5
Rent, rates and taxes	6.6
Depreciation	7.4
Sundry administration expenses	6.5
Semi-variable expenses (At 50% of capacity):	
Maintenance and repairs	3.5
Indirect labour	7.9
Sales department salaries, etc.	3.8
Sundry administration salaries	2.8

Variable expenses (At 50% of capacity):

Materials	21.7
Labour	20.4
Other expenses	7.9
Total cost	98.0

Assume that the fixed expenses remain constant for all levels of production; semi variable expenses remain constant between 45 per cent and 65 per cent of capacity, increasing by 10 per cent between 65 per cent and 80 per cent capacity and by 20 per cent between 80 per cent and 100 per cent capacity.

Sales at various levels are:	*₹ lakh*
50% capacity	100
60% capacity	120
75% capacity	150
90% capacity	180
100% capacity	200

Prepare a flexible budget for the year and forecast the profit at 60 per cent, 75 per cent, 90 per cent and 100 per cent of capacity.

5. A factory is currently running at 50% capacity and produces 5,000 units at a cost of ₹90 per unit as per details below:

	₹	
Materials	50	
Labour	15	
Factory Overheads	15	(₹6 fixed)
Administrative Overheads	10	(₹5 fixed)

The current selling price is ₹100/- per unit.

At 60% working, material cost per unit increases by 2% and selling price per unit falls by 2%. At 80% working, material cost per unit increases by 5% and selling price per unit falls by 5%.

Estimate profits of the factory at 60% and 80% working and offer your comments.

6. The following overhead expenses relate to a cost centre operating at 50% of normal capacity. Draw up a flexible budget for the cost centre for operating at 75%, 100% and 125% of normal capacity.

Indicate the basis upon which you have estimated each item of expenses for the different operating levels.

	₹
Foremen	60
Assistant Foremen	40
Inspectors	65
Shop labourers	40
Machinery repairs	100
Defective work	25
Consumable stores	20
Overtime bonus	Nil
Machine depreciation	110
Total	460

NOTES

11.10 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice*, 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management*, 4th edition. New Delhi: Vikas Publishing House.

UNIT 12 MARGINAL COSTING AND BREAK EVEN ANALYSIS

Structure

12.0 INTRODUCTION

Decision making is the dominant activity undertaken by managers. This activity has a bearing on the company's operations and the resultant profit/loss. Under cost behaviour, you learnt that the costs may be variable or fixed. Where fixed costs due to its nature cannot be easily changed in short term nor generally is, variable costs arise due to the manager's decision to produce additional outputs or services. Marginal costing helps with the analysis of such costs. It takes into account the variable costs unlike the traditional method of costing, which is absorption costing. In this unit, you will be introduced to the concepts of marginal costing. The concept of break-even analysis, which requires an understanding of marginal costing, will be discussed in Unit 14.

12.1 OBJECTIVES

After going through this unit, you will be able to:

- Explain the meaning of marginal costing
- Differentiate between marginal and absorption costing
- Discuss the justification for marginal costing
- Explain marginal cost sheet and segregation of semi-variable costs
- Examine the concepts of contribution and key factor

12.2 DEFINITION: MARGINAL AND ABSORPTION COSTING

NOTES

There are mainly two techniques of product costing and income determination — (a) Absorption costing; (b) Marginal costing.

Absorption Costing

This is a total cost technique under which total cost (i.e., fixed cost as well as variable cost) is charged as production cost. In other words, in absorption costing, all manufacturing costs are absorbed in the cost of the products produced. In this system, fixed factory overheads are absorbed on the basis of a predetermined overhead rates, based on normal capacity. Under/over absorbed overheads are adjusted before computing profit for a particular period. Closing stock is also valued at total cost which includes all direct costs and fixed factory overheads (and sometimes administration overheads also).

Absorption costing is a traditional approach and is also known as Conventional Costing or Full Costing.

Marginal Costing

An alternative to absorption costing is marginal costing, also known as 'variable costing' or direct costing. Under this technique, only variable costs are charged as product costs and included in inventory valuation. Fixed manufacturing costs are not allotted to products but are considered as period costs and thus charged directly to Profit and Loss Account of that year. Fixed costs also do not enter in stock valuation.

Both absorption costing and marginal costing treat non-manufacturing costs (i.e., administration, selling and distribution overheads) as period costs. In other words, these are not inventoriable costs.

Product Costs and Period Costs

Product costs are those costs which become a part of production cost. Such costs are also included in inventory valuation. Period costs, on the other hand, are those costs which are not associated with production. Such costs are treated as an expense of the period in which these are incurred. These do not form part of the cost of products or inventory. These are directly transferred to Profit and Loss Account of the period.

12.2.1 Concept of Marginal Cost and Marginal Cost Sheet

Marginal cost is the additional cost of producing an additional unit of product. It is the total of all variable costs. It is composed of all direct costs and variable overheads. The CIMA London has defined marginal cost 'as the amount at any

NOTES

given volume of output by which aggregate costs are changed, if volume of output is increased or decreased by one unit'. It is the cost of one unit of product which would be avoided if that unit were not produced. An important point is that marginal cost per unit remains unchanged, irrespective of the level of activity.

Illustration 12.1: A company manufactures 100 units of a product per month. Total fixed cost per month is ₹ 5,000 and marginal cost per unit is ₹ 250. The total cost per month will be:

		₹
Marginal (variable) cost of 100 units		25,000
Fixed cost		5,000
	Total cost	30,000

If output is increased by one unit, the cost will appear as follows:

Marginal cost (101 × 250)		25,250
Fixed cost		5,000
	Total cost	30,250

Thus the additional cost of producing one additional unit is ₹ 250, which is its marginal cost. However, where fixed costs may also increase with the increase in the volume of output, but this may be the result of increase in production capacity. Such increases in fixed costs are dealt with as a part of what is known as 'differential cost analysis'.

Illustration 12.2: Following information relates to a factory manufacturing pencils:

Production in Units	*Direct Material* ₹	*Direct Labour* ₹	*Other Variable Cost* ₹	*Fixed Costs* ₹	*Total Cost* ₹
500	1,000	750	500	1,000	3,250
1,000	2,000	1,500	1,000	1,000	5,500
1,500	3,000	2,250	1,500	1,000	7,750
2,000	4,000	3,000	2,000	1,000	10,000
2,500	5,000	3,750	2,500	1,000	12,250

Show the effect of increase in output on per unit cost of production through a chart and calculate the marginal cost of production.

Solution:

Production Units	*Total Variable Cost Per Unit* ₹	*Fixed Cost Per Unit* ₹	*Total Cost Per Unit* ₹
500	4.50	2.00	6.50
1,000	4.50	1.00	5.50
1,500	4.50	0.67	5.17
2,000	4.50	0.50	5.00
2,500	4.50	0.40	4.90

NOTES

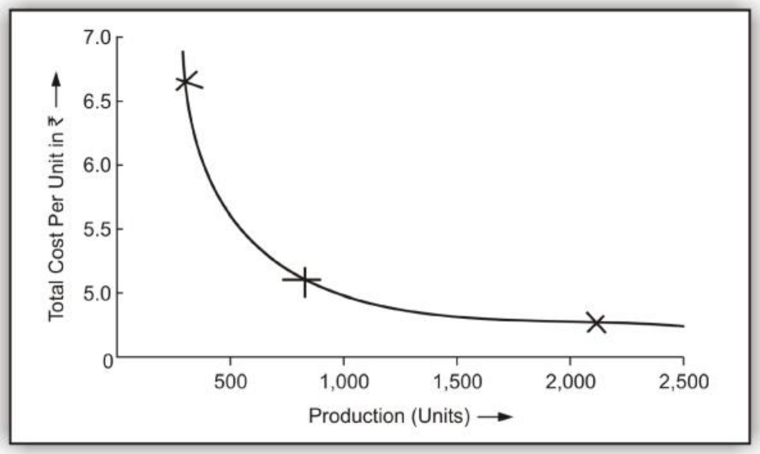


Chart Depicting Total Cost per Unit at Varying Levels of Output

The above chart shows that with an increase in production, the total cost per unit is decreasing. This is because the fixed overheads are constant at every level and their effect per unit goes on decreasing with increase in volume of output.

The marginal cost of production per unit has remained constant and the fixed cost per unit has lowered down from ₹2 to ₹0.40. This will affect to a great extent firm's decision to increase production in the present illustration.

Marginal cost in the present illustration can be calculated with the help of the following formula:

Marginal Cost = Direct Material Cost + Direct Labour Cost + Other Variable Costs

Or

Total Cost – Fixed Cost

When the production is 500 units, the marginal cost of production shall be equal to ₹1,000 + ₹750 + ₹500, *i.e.*, ₹2,250 (or ₹3,250 – ₹1,000). Marginal cost at other levels of output can be known in the similar fashion.

Check Your Progress

1. Mention some of the other names used for absorption costing.
2. How are fixed manufacturing costs treated in marginal costing?
3. Does the marginal cost per unit change as per the level of activity?

12.3 MARGINAL COSTING VS ABSORPTION COSTING AND SEGREGATION OF SEMI-VARIABLE COSTS

The points of distinction between marginal costing and absorption costing are summarized as follows:

1. **Treatment of fixed and variable costs:** In marginal costing, only variable costs are charged to products. Fixed costs are treated as period costs and charged to Profit and Loss Account of the period.

   In absorption costing, all costs (both fixed and variable) are charged to the product. The fixed factory overhead cost is absorption in units produced at a rate predetermined on the basis of normal capacity utilization (and not on the basis of actual production).

2. **Valuation of stock:** In marginal costing, stock of work-in-progress and finished goods are valued at marginal cost only.

   In absorption costing, stocks are valued at total cost which includes both fixed and variable costs. Thus stock values in marginal costing are lower than that in absorption costing.

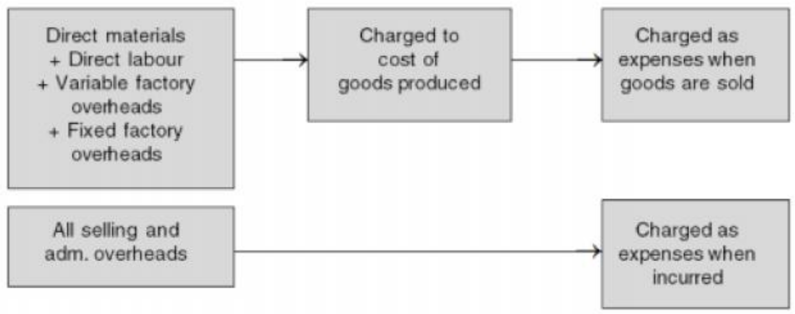


Fig. 12.1 *Absorption Costing Approach*

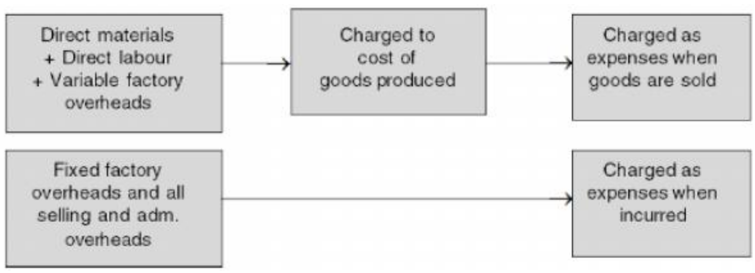


Fig. 12.2 *Marginal Costing Approach*

3. **Measurement of profitability:** In marginal costing, relative profitability of pro-ducts or departments is based on a study of relative contribution made by respective products or departments. The managerial decisions are thus guided by contribution.

In absorption costing, relative profitability is judged by profit figures which is also a guiding factor for managerial decisions.

Income Determination under Marginal Costing and Absorption Costing

NOTES

The net profit under the two systems may be same or may be different. Difference in profit may be because of the different basis of inventory valuation. In marginal costing stocks of work-in-progress and finished goods are valued at variable cost whereas in absorption costing stocks are valued at total cost.

Income statement under the two systems may be prepared in the formats given below:

Format of Income Statement (Absorption costing)

		₹
Sales		xxxxx
Production Costs:		
Direct material consumed		xxxxx
Direct labour cost		xxxxx
Variable manufacturing overheads		xxxxx
Fixed manufacturing overheads		xxxxx
Cost of goods produced		xxxxx
Add: Opening stock of finished goods		xxxxx
(valued at cost of previous period's production)		
Cost of goods available for sale		xxxxx
Less: Closing stock of finished goods		xxxxx
(valued at production cost of current period)		
Cost of goods sold		xxxxx
Add: (or less) Under (or over) absorption of fixed		
manufacturing overheads		xxxxx
Add: Administration costs	xxxxx	
Selling and distribution costs	xxxxx	xxxxx
Total Cost		xxxxx
Profit (Sales – Total cost)		xxxxx

Illustration 12.3:

Zen Ltd supplies you the following data:

Direct material cost		₹ 48,000
Direct wages		₹ 22,000
Variable overheads	—Factory	₹ 13,000
	—Adm. and selling	₹ 2,000
Fixed overheads	—Factory	₹ 20,00
	—Adm. and selling	₹ 8,000
Sales		₹ 1,25,000

Prepare an income statement under absorption costing.

NOTES

Solution:

Income Statement (Absorption Costing)

		₹
(A) Sales		1,25,000
Direct materials		48,000
Direct wages		22,000
Factory overheads—Variable	13,000	
—Fixed	20,000	33,000
Cost of Production		1,03,000
Adm. and selling overheads		
—Variable	2,000	
—Fixed	8,000	10,000
(B) Total Cost		1,13,000
Profit (A – B)		12,000

Format of Income Statement (Marginal Costing)

	₹
Sales	xxxxx
Variable manufacturing costs	
—Direct material consumed	xxxxx
—Direct labour	xxxxx
—Variable manufacturing overheads	xxxxx
Cost of goods produced	xxxxx
Add: Opening stock of finished goods	xxxxx
(valued at variable cost of previous period)	
Less: Closing stock of finished goods (valued at current variable cost)	
Cost of goods sold	xxxxx
Add: Variable adm., selling and dist. overheads	xxxxx
Total Variable Cost	xxxxx
Contribution (Sales – Total variable cost)	xxxxx
Less: Fixed costs (Production, adm., selling and dist.)	xxxxx
Net Profit	xxxxx

Illustration 12.4: From the data given in Illustration 12.3, prepare an income statement under marginal costing.

NOTES

Solution:

Income Statement (Marginal Costing)

			₹
(A)	Sales		1,25,000
	Direct materials		48,000
	Direct wages		22,000
	Variable overheads—Factory		13,000
	—Adm. and selling		2,000
(B)	Variable cost		85,000
(C)	**Contribution** (A – B)		40,000
	Fixed overheads —Factory	20,000	
	—Adm. and selling	8,000	
(D)	Total fixed overheads		2,8000
	Profit (C – D)		12,000

Comments: Profit under absorption costing and marginal costing is the same. This is because there are no opening and closing stocks. However, when there are opening and/or closing stocks, profit/loss under the two systems may be different.

Difference in Profit under Marginal Costing and Absorption Costing

Profit under the two systems may be different because of difference in the stock valuation. Position in this regard is summarized as follows:

(a) Production is equal to sales

(i) When there are no opening and closing stock, profit/loss under absorption and marginal costing systems are equal.

(ii) When opening stock is equal to closing stocks then also profit/loss under the two systems will be equal provided the fixed cost element in opening and closing stocks is the same amount.

(b) Production is more than sales

When production during a period is more than sales, i.e., when closing stock is more than opening stock, the profit as per absorption costing will be more than that shown by marginal costing. This is because in absorption costing a part of fixed overheads included in closing stock value is carried forward to next accounting period in the form of closing stock.

(c) Production is less than sales

When production during a period is less than sales, i.e., when opening stock is more than closing stock, profit shown by marginal costing will be more than that shown by absorption costing. This is because under absorption costing, cost of goods sold is higher because a part of fixed cost from the preceding period is added to the current year's cost of goods sold in the form of opening stock.

To summarize the effect on profit under marginal costing and absorption costing:

Effect of	*Profit in marginal costing*	*Profit in absorption costing*
1. Production = Sales	13,000	Equal
2. Production > Sales	Lower	Higher
3. Production < sales	Higher	Lower

Illustration 12.5: XYZ Ltd supplies you the following data, for the year ending 31 December 2017.

Production—1,100 units, Sales 1,000 units

There was no opening stock.

	₹
Variable manufacturing cost per unit	7
Fixed manufacturing overheads (total)	2,200
Variable selling and administration overheads per unit	0.50
Fixed selling and administration overheads (total)	400
Selling price per unit	15

Prepare

(a) Income statement under marginal costing

(b) Income statement under absorption costing

(c) Explain the difference in profit under marginal and absorption costing, if any

Solution:

Income Statement (Absorption Costing)

for the year ended 31 December 2017

		₹
Sales (1,000 units @ ₹15)		15,000
Variable manufacturing overheads (1,100 units @ ₹7)		7,700
Fixed manufacturing overheads (1,100 units @ ₹2)		2,200
Cost of goods produced		9,900
Less: Closing stocks (100 units @ ₹9)*		900
Cost of goods sold		9,000
Add: Selling and adm. overheads		
—Variable (1,000 units × ₹0.50)	500	
—Fixed	400	900
Total cost		9,900
Profit (Sales – Total Cost)		5,100

*Closing stock is valued at manufacturing cost per unit, i.e., ₹ 7 + 2 = ₹ 9 per unit.

NOTES

Income Statement (Marginal Costing)

for the year ending 31 December 2017

		₹
Sales (1,000 units @ ₹15)		15,000
Variable manufacturing cost (1,100 units @ ₹7)		7,700
Less: Closing Stock (100 units @ ₹7)		700
Cost of goods produced		7,000
Add: Variable selling and adm. overheads (1,000 units @ ₹0.50)		500
Total variable cost of goods sold		7,500
Contribution (Sales – Total variable cost)		7,500
Less: Fixed overheads—Manufacturing	2,200	
—Selling and adm.	400	2,600
Profit		4,900

Comments: Profit under absorption costing is ₹ 5,100 and under marginal costing ₹ 4,900. The difference of ₹ 200 in profit is due to over-valuation of closing stock in absorption costing by ₹ 200 (i.e., ₹ 900 – 700).

12.3.1 Justification and Features of Marginal Costing

The justification of marginal costing can be understood through the major features which make it stand out.

The essential characteristics and mechanism of marginal costing technique may be summed up as follows:

1. Segregation of costs into fixed and variable elements: In marginal costing all costs are classified into fixed and variable. Semi-variable costs are also segregated into fixed and variable elements.
2. Marginal costs as products costs: Only marginal (variable) costs are charged to products produced during the period.
3. Fixed costs as period costs: Fixed costs are treated as period costs and are charged to Costing Profit and Loss Account of the period in which they are incurred.
4. Valuation of inventory: The work-in-progress and finished stocks are valued at marginal cost only.
5. Contribution: Contribution is the difference between sales value and marginal cost of sales. The relative profitability of products or departments is based on a study of 'contribution' made by each of the products or departments.
6. Pricing: In marginal costing, prices are based on marginal cost plus contribution.
7. Marginal costing and profit: In marginal costing, profit is calculated by a two-stage approach. First of all, contribution is determined for each product

or department. The contributions of various products or departments are pooled together and such a total of contributions from all products is called 'Fund'. Then from this fund is deducted the total fixed cost to arrive at a profit or loss.

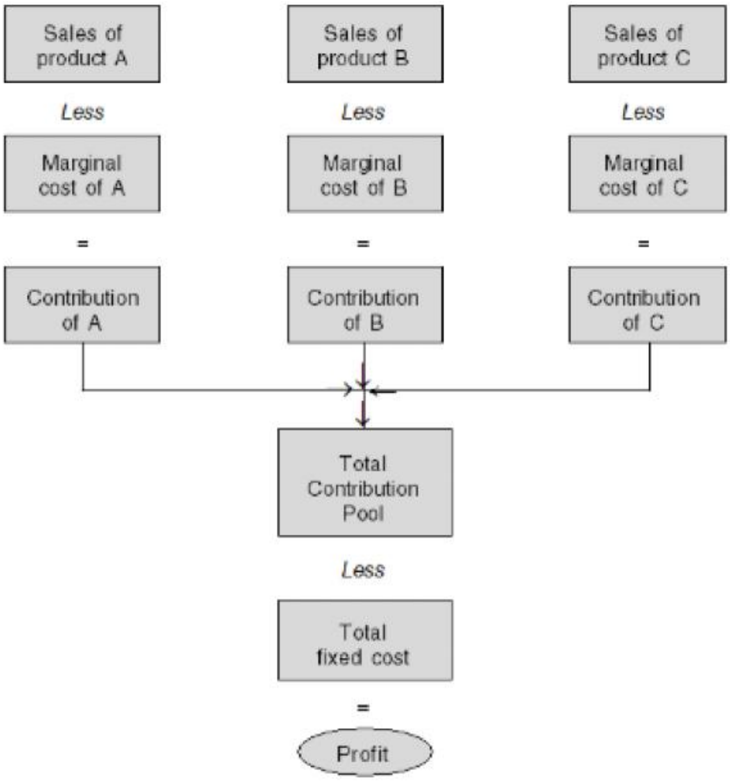


Fig. 12.3 *Profit Ascertainment in Marginal Costing in a Multi-product Company*

In further units, you will learn about the advantages and limitations of the technique.

12.4 CONTRIBUTION AND KEY FACTOR

Contribution is the difference between sales and the marginal (variable) cost of sales. It is also known as contribution margin (Cm) or gross margin. Thus contribution is calculated by the following formula:

Contribution	= Sales – Variable cost	(C = S – V)
Also, Contribution	= Fixed cost + Profit	(C = F + P)
or Contribution	= Fixed cost – Loss	(C = F – L)

From this, the following marginal cost equation is developed:

$$S - V = F + P$$

NOTES

If any three of the above four factors in the equation are known, the fourth one can be easily found out. Thus:

or P = S – V – F

P = C – F

F = C – P

V = S – F – P

Example:

Sales = ₹ 12,000

Variable cost = ₹ 7,000

Fixed cost = ₹ 4,000

Thus:

C = S – V

C = 12,000 – 7,000 = ₹ 5,000

P = C – F

P = 5,000 – 4,000 = ₹ 1,000

Thus profit is ₹ 1,000.

If sales figure is not given but contribution is given then sales can be found out as follows:

S = C + V

S = 5,000 + 7,000 = ₹ 12,000

When fixed cost (F) is not given but profit is given, then:

F = C – P

F = 5,000 – 1,000 = ₹ 4,000

When variable cost (V) is not given, then:

V = S – C

V = 12,000 – 5,000 = ₹ 7,000

The concept of contribution is extremely helpful in the study of break-even analysis and management decision making.

The objective of a business is to earn maximum profit. However, it is not always easy to achieve this objective because profit earning is affected by a variety of factors. For example, an undertaking may have sufficient orders on hand, ample skilled labour and production capacity, but may be unable to obtain all the quantity of material it needs for the manufacture of maximum quantities which could be sold. Thus, material is the factor which limits the size of output and prevents an undertaking from maximizing its profit. Similarly, sometimes a business is not able to sell all that it can produce. In such a case, sales is the limiting factor.

A limiting or key factor may thus be defined as the factor in the activities of an undertaking, which at a particular point in time or over a period will limit the volume of output. Examples of limiting factors are:

(i) Sales

(ii) Materials

(iii) Labour of particular skill

(iv) Production capacity or machine hours

(v) Financial resources.

The purpose of the limiting factor technique is to indicate the most profitable course of action in all such cases where alternatives are possible.

Contribution per unit of key factor—When a key factor is operating, the most profitable position is reached when contribution per unit of key factor is maximum. For instance, if a choice lies between producing product A which yields a contribution of ₹15 per unit and product B which yields a contribution of ₹20 per unit, product B would be more profitable.

If, however, product A takes 3 kg of material (which is a limiting factor) and product B takes 5 kg the respective contributions per kg of material would be:

Product A = ₹15 ÷ 3 kgs = ₹5

Product B = ₹20 ÷ 5 kgs = ₹4

product A, which gives the greater contribution in terms of per unit of limiting factor will be more profitable.

Illustration 12.6: The following data at is given:

		Product A	Product B
Direct materials	₹	24	14
Direct labour @ ₹3 per hour	₹	6	9
Variable overhead @ ₹4 per hour	₹	8	12
Selling price	₹	100	110
Standard time		2 hrs	3 hrs

State which product you would recommend to manufacture when:

(a) Labour time is the key factor

(b) Sales value is the key factor

Solution:

	Product A ₹	Product B ₹
Selling price (S)	100	110
Direct material	24	14
Direct labour	6	9
Variable overhead	8	12
Variable cost (V)	38	35
Contribution (S – V)	62	75
(a)Contribution per labour hour	₹62 ÷ 2 hrs = ₹31	₹75 ÷ 3 hrs = ₹25
(b) Contribution per rupee of sales value	= ₹62 ÷ 100 = 62 paise	= ₹75 ÷ 110 = 68 paise

Conclusion

(a) product A is recommended when labour time is the key factor because contribution per labour hour of product A is more than that of product B.

(b) When sales value is the key factor, product B is recommended because contribution per rupee of sales value of product B is more than that of product A.

(c) When sale quantity is the key factor, product B is more profitable because its contribution per unit is higher than that of product A.

Check Your Progress

4. In which type of costing is stock values lower?
5. What is the nature of profit/loss under absorption and marginal costing in case there is no opening and closing stock?
6. In which type of industries is marginal costing less effective?
7. What is the purpose of limiting factor technique?

12.5 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. Some of the other names for absorption costing are conventional costing or full costing.
2. In marginal costing, fixed manufacturing costs are not allotted to products but are considered as period costs and thus charged directly to Profit and Loss Account of that year.
3. The marginal cost per unit remains unchanged, irrespective of the level of activity.
4. Stock values in marginal costing are lower than that in absorption costing since they are valued at marginal cost only.
5. When there are no opening and closing stock, profit/loss under absorption and marginal costing systems are equal.
6. In capital-intensive industries, the proportion of fixed costs (like depreciation, maintenance, etc.) is large, the marginal costing technique, which ignores fixed cost, thus proves less effective in such industries.
7. The purpose of limiting factor technique is to indicate the most profitable course of action in all such cases where alternatives are possible.

NOTES

12.6 SUMMARY

- Absorption costing and marginal (variable) costing are the two main techniques of cost ascertainment and income determination.
- Absorption costing is a traditional method under which all manufacturing costs (variable and fixed) are treated as Product Costs while non-manufacturing costs (e.g., selling and administrative expenses) are treated as Period Costs.
- Products costs become a part of production cost and period costs are not associated with production.
- Marginal or variable costing is a managerial technique under which, only variable manufacturing costs are treated as products costs and all fixed manufacturing costs and all non-manufacturing costs are treated as period costs and charged directly to Profit and Loss Account.
- The CIMA London has defined marginal cost 'as the amount at any given volume of output by which aggregate costs are changed, if volume of output is increased or decreased by one unit'. It is the cost of one unit of product which would be avoided if that unit were not produced. An important point is that marginal cost per unit remains unchanged, irrespective of the level of activity.
- The essential characteristics of marginal costing include factors like segregation of costs into fixed and variable elements, taking marginal costs as product costs, consideration of fixed costs as period costs, valuation of inventory at marginal cost only, pricing based on marginal cost plus contribution and the pooling of contribution from different products and its deduction form total fixed costs to arrive at profit or loss.
- The points of difference between marginal and absorption costing are on account of treatment of fixed and variable costs, valuation of stock and measurement of profitability.
- In marginal costing stocks of work-in-progress and finished goods are valued at variable cost whereas in absorption costing stocks are valued at total cost.
- Profits under the absorption and marginal costing may be different because of the difference in stock valuation.

12.7 KEY WORDS

- **Absorption costing:** It refers to the total cost technique under which total cost (i.e., fixed cost as well as variable cost) is charged as production cost.

- **Marginal costing:** It is the accounting system in which variable costs are charged to cost units and fixed costs of the period are written off in full, against the aggregate contribution.
- **Contribution:** It is the difference between sales value and marginal cost of sales.
- **Limiting or Key factor:** It may be defined as the factor in the activities of an undertaking, which at a particular point in time or over a period will limit the volume of output.

12.8 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. What are product and period costs?
2. What are the points of distinction between marginal and absorption costing?
3. Mention the major characteristics of marginal costing.
4. Write a short note on contribution and limiting or key factor.

Long-Answer Questions

1. Explain in detail the concept of marginal cost and the preparation of marginal cost sheet.
2. Examine the difference between marginal and absorption costing in terms of income determination and profit.

12.9 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice*, 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management,* 4th edition. New Delhi: Vikas Publishing House.

UNIT 13 MANAGERIAL USES OF MARGINAL COSTING

NOTES

Structure

13.0 INTRODUCTION

Decision making is one of the basic functions of management. Strategic decision making involves selecting among alternative strategies to serve the overall goals of the organization. Thus, management is continuously engaged in evaluating various alternative courses of action and in selecting the best out of these. For each managerial problem, generally there are at least two alternatives available. For example, in a company, which is manufacturing televisions, the management may have to decide whether to make the picture tube within the company or to buy it from an outside supplier. Similarly, a company may have to decide whether to sell in the domestic market at a profit or to accept an export order at less than prevailing domestic price. The decision to be taken will be affected by cost and non-cost factors and the cost accountant must use all the information at his disposal to help management make the right decision. In this unit, you will learn about the concept of decision-making and steps of decision-making.

13.1 OBJECTIVES

After going through this unit, you will be able to:

- Explain the meaning of decision making and profit planning techniques
- Describe the pricing decisions

- Discuss make or buy and mix of sale decisions
- Examine method of production, plant shutdown and level of activity planning decisions

NOTES

13.2 DECISION MAKING AND PROFIT PLANNING TECHNIQUES

Before learning about decisions of product priorities and profit decision, it is important to learn some basic concepts.

Decision making being one of the basic functions of a manager takes place at every level in the organization. Since a management accountant is responsible for generating relevant and requisite information for use in decision making, therefore, he needs to possess the understanding of the nature and process of decision making. Decision making is the process of making choices between alternative courses of action. To ensure a right choice, a decision maker has to follow a systematic approach in decision making which consists of the following steps:

- Identification and analysis of the problem;
- Identification of alternatives;
- Evaluation of alternatives;
- Selection of an alternative;
- Detailed plan for carrying out of the alternative; and
- Evaluation and control.

Identification and Analysis of the Problem

Every rational decision making process begins with the identification of the problem. The identification of a problem provides a decision maker an opportunity to work for the solution of the problem.

However, mere identification of the problem will not help a decision maker to find a solution for the problem. Every problem calls for an in-depth study as generally the problems are characterized by 'ice-berg' principle where a little portion is visible and the major portion is hidden about which the decision maker has no clue. Therefore, a decision maker has to make all efforts to identify and examine every issue involved in the problem before making any attempt to find a logical solution for the problem. In fact, such an attempt calls for problem audit which will help a decision maker not only to identify the possible causes of the problem but also formulate the objectives to be met in solving the problem.

Identification of Alternatives

The analysis of the problem is followed by the identification of feasible alternatives that may serve as potential solutions to a problem. This step of decision making calls for a prediction which, in fact, is itself a decision about how to make decision.

However, a decision maker has to remember that best possible solutions do not automatically submit themselves to the decision making process, he has to formulate a variety of ways of devising alternatives. Although a number of tools and techniques like lateral thinking, digging a hole elsewhere, and morphological approach have been developed over the year to help decision makers in this regard, yet such an attempt calls for a lot of effort on the part of decision makers in terms of continuous research and thinking. In the past this activity was purely based on a manager’s intuition, however, at present, many managers prefer to use decision support system for this purpose.

Evaluation of Alternatives

In this step of decision making, a management accountant has a tremendous role to play by providing adequate information to the decision maker on the economic and financial worth of the alternatives that is essential for evaluation. To discharge this function effectively, a management accountant needs to possess knowledge about a number of tools and techniques like profit planning, capital budgeting, risk techniques, linear programming, decision tree and forecasting techniques.

Selection of an Alternative

The central task of decision making is the choice from among alternatives. To choose the best alternative, a decision-maker needs to devise the selection criteria which may not be easy. Generally, the choice of the best alternative is simply accomplished by selecting the alternative which best meets the chosen criterion. Logically, a decision maker would prefer to choose the best alternative but practically speaking it is difficult to define the ‘best’ as different criteria would result in different decisions from the same set of alternatives. Although, for certain decision situations, decision makers can devise the selection criteria that would help them to identify the best alternative, yet some decision situations are so complex that devising any selection criteria for them is practically impossible. However, a decision-maker has to take a number of factors including the ones like resources, competence and experience of the company that have greater impact on the choice of the alternative.

Detailed Plan for Carrying out of the Alternative

Once the selection of the alternative is made, a decision-maker has to carry out the same. Such a step may demand the implementation of plans and programmes.

Evaluation and Control

After the plans and programmes, have been implemented to attain the desired outcome of the decision, a decision maker has to evaluate the actual performance with a purpose to find how actual results reconcile with the desired outcomes. This would also mean to devise and implement the necessary measures if the actual performance is not in tune with the standards.

NOTES

Decision of Product priorities and profit decision

The focus of this unit is on short-term decisions, such as:

(*i*) Whether to sell a product in the domestic market or export it

(*ii*) Whether to make a component part inhouse or buy it from an outside supplier

(*iii*) Whether to change the present product mix to make it more profitable or not

Most managers consider a decision as a short-term if it involves a period of one year or less. This cut off period is arbitrary but commonly used, though a better distinction is that long-term decisions normally require substantial capital investment with implications for several future years. Moreover, short-term decisions are more easily reversed than long-term. For example, price of a product can always be changed according to market conditions, export sales can be stopped, if necessary, and so on.

Long-term decisions involve consideration of return on capital employed, discounted cash flow, etc. Such decisions have not been discussed in this unit.

Relevant Costs and Relevant Revenues

When management makes decisions, it has to concentrate on relevant costs and relevant revenues. Not all costs and revenues are relevant. The relevant costs and relevant revenues are those expected future costs and expected future revenues that differ under different alternative courses of action being considered. Thus relevant costs and relevant revenues should have two characteristics:

(*a*) The costs and revenues must relate to future; and

(*b*) They must differ among different courses of action.

The focus is on the future because decision to be made affect only future. Nothing can be done to change the past. Management cannot change the cost of plant and machinery purchased in 2001. It can change future costs by its current decisions. Hence, relevant costs are future costs that will differ depending on the actions of the management. For each decision, the management must decide which costs are relevant.

Cost and Non-cost Factors in Decision Making

In strategic decision making, the management has to assess not only cost factors but also certain non-cost factors. *Cost factors or quantitative factors* are those which can be quantified in monetary terms. For example, in determining the selling price of a product, the cost of production of which is ₹100 per unit, the management will add, say 20% margin of profit and decide the selling price at ₹100 + 20 = ₹120 per unit. While the company is selling its product at ₹120 per unit, a competitor enters the market and starts selling the same product at ₹95 per unit. Now the company will incur a loss of ₹5 per unit if in order to compete, it sells the product at competitor’s price because its own cost is ₹100 per unit. So, on cost

considerations alone, the company should stop selling the product because selling results in a loss of ₹5 per unit. The management has to decide whether to sell at a loss or stop production of the product to avoid the loss or how to establish a long-term competitive advantage.

NOTES

In such a situation, it is difficult to make a decision on cost factors alone. It is essential that *non-cost factors or qualitative factors* must be brought to the attention of the management in decision making process, since otherwise there is a danger of wrong decision being made. Non-cost factors are those which cannot be expressed in monetary terms with accuracy. For example, it may not be possible to quantify in monetary terms the effect of a decline in the morale of employees or loss of customer goodwill, if the company closes down the manufacturing facilities of a particular product.

Non-cost factors vary according to the decision under consideration. For example, a company plans to enter export business and it receives an export order at a price which is less than the own cost. On cost factors, the export order should be outrightly rejected because it does not cover even the cost. However, the management should consider the non-cost factors such as goodwill earned by the company for getting the export house status, earning valuable foreign exchange from the order, and so on. For getting these benefits, the company should consider incurring a small and tolerable amount of loss, if it can afford it.

Check Your Progress

1. State the first step in the rational decision making process.
2. Mention some of the tools used for evaluation of alternatives in the decision making process.
3. List the characteristics which are a must for relevant costs and relevant revenues.

13.3 DIFFERENT DECISIONS AND MARGINAL COSTING

In this section, you will learn about the application of marginal costing to different types of decisions.

13.3.1 Pricing Decisions

Although prices are regulated more by market conditions of demand and supply and other economic factors than by the decisions of management, the management while fixing prices has to keep in view the level of profit desired. In the long-run, the selling prices of products or services must be higher than the total cost as otherwise the profit cannot be earned. But frequently circumstances arise for management to consider special conditions and sell its regular product at a special

NOTES

price which may be lower than the total cost. Such conditions may be like the following:

(*a*) Under normal circumstances

(*b*) In times of competition and/or trade depression

(*c*) Accepting additional bulk orders at lower prices to utilize spare plant capacity

(*d*) Pricing of export sales

(*a*) *Selling prices under normal circumstances*

In the long run, under normal circumstances, the selling price must cover total cost (*i.e.*, variable cost plus fixed cost) and also give a reasonable amount of profit. This is essential for the survival of a business.

In the short run, the selling price may have to be fixed below total cost but it should be above variable cost. In other words, the selling price may be temporarily fixed at marginal cost plus contribution basis and the amount of contribution depends upon demand and supply, acuteness of competition, non-cost factors, etc. But it should be noted that fixation of selling price below total cost may be made only on a short-term basis.

(*b*) *Pricing in competition and depression*

When there is acute competition or in periods of depression, products may have to be priced below total cost, if such a step is necessary to meet the special situation. When marginal cost technique is used for pricing, the price should be higher than the marginal cost so that it makes a contribution towards fixed cost and help reduce the loss. When price is just equal to marginal cost, the amount of loss will also be equal to the amount of fixed cost because in such situations the selling prices make no contribution towards fixed cost.

Thus, under special circumstances, like the trade depression or competition, if selling price is higher than marginal cost, even though it is below total cost, the production should not be stopped. This is because fixed costs will have to be incurred irrespective of whether production is continued or not, and continuing the production will help in reducing the amount of loss.

As a note of caution, fixation of selling price below total cost should be made only on a short-term basis. Pricing based on marginal cost plus contribution helps companies to take advantage of short-term opportunities. But at the same time, no firm can afford to incur loss on a long-term basis and thus in the long-run, the selling price must cover total cost and give a reasonable amount of profit.

Example:

Fixed cost	₹1,00,000 (total)
Marginal cost	₹7 per unit
Current market price	₹8 per unit
Output	50,000 units

Should company sell or not?

Solution:

Marginal cost (50,000 units @ ₹7)	₹3,50,000
Fixed cost	₹1,00,000
Total cost	₹4,50,000

Cost per unit = ₹4,50,000 ÷ 50,000 units = ₹9

Although the selling price does not cover the total cost, yet it is wise to continue to produce and sell because such a step will reduce the loss (on account of fixed cost) that will be incurred if production is stopped. If production is stopped, the loss would be ₹1,00,000 (the amount of fixed cost), but if production is continued the loss will be as follows:

	Sales (50,000 units @ ₹8)	₹4,00,000
Less:	Total cost (Marginal cost + Fixed cost)	₹4,50,000
	Loss	₹50,000

Thus, by continuing to produce and sell at below total cost, the loss is reduced by ₹50,000, *i.e.*, from ₹1,00,000 to ₹50,000.

Selling Price Below Marginal Cost

When selling price falls below marginal cost, the loss will be more than the amount of fixed cost. In such an eventuality, it will be better to stop production so as to reduce the amount of loss because stoppage in production means loss will be just equal to fixed cost.

However, in certain special circumstances like the following, production may be continued even if the selling price is below the marginal cost:

1. To popularize a new product. A new product introduced in the market may be sold at a very low price so as to make it popular.
2. To eliminate competitors from the market.
3. To dispose of perishable products so as to avoid total loss.
4. To export so as to earn foreign exchange. Government may allow import quota against foreign exchange earnings and profit from import quota may be more than the loss on exporting the product at low prices.
5. To keep plant and machinery in operation as idle machines may be liable to deterioration.
6. To prevent loss of future orders as temporary closure may break business connections with customers that can be re-established at a heavy expenditure.
7. To help in the sale of a conjoined product which is making large profits.
8. To maintain production and to keep employees occupied.

(*c*) *Exploring New Markets at Lower Prices to Utilize Spare Plant Capacity*

Sometimes, a company is not able to fully utilize plant capacity when selling at total cost plus profit basis. In such a case, it may explore new markets and find opportunities to receive additional bulk order or export order at a price which

NOTES

may be below total cost but above marginal cost so that the price makes a 'contribution'. The entire amount of contribution from such sales is profit because fixed cost is already recovered from current sales at total cost plus profit basis. Such additional sales at below total cost is possible only because in accepting bulk orders and export sales, price discrimination is possible. In this way spare plant capacity can be utilized to earn additional profit.

Illustration 13.1: A manufacturer of plastic buckets makes an average profit of ₹2.50 per piece on a selling price of ₹14.50 by producing and selling 60,000 pieces at 60% of potential capacity. His cost of sales is:

	₹ per piece
Direct materials	4.00
Direct wages	1.00
Factory overheads (variable)	3.00
Selling overheads (variable)	0.25
Total fixed cost is ₹2,25,000	

During the current year, he intends to produce the same number of units, but anticipates that (*a*) fixed cost will go up by 10%, and (*b*) material and labour costs will go up by 5% each.

Under these circumstances, he obtains a bulk offer for a further 20% of his capacity. What minimum price you would recommend for acceptance to ensure an overall profit of ₹1,60,000?

Solution:

Budgeted Statement for the Current Year Prior to Acceptance of 20% Capacity Order

	Per piece ₹	*Total* ₹
Sales (60,000 pieces)	14.50	8,70,000
Direct material (₹4 + 5%)	4.20	2,52,000
Direct labour (₹ 1 + 5%)	1.05	63,000
Variable factory overheads	3.00	1,80,000
Variable selling overheads	0.25	15,000
Variable cost	8.50	5,10,000
Contribution (Sales – Variable cost)	6.00	3,60,000

Fixed cost ₹2,25,000 + 10%	= ₹2,47,500	
Profit	= Contribution – Fixed cost	
	= 3,60,000 – 2,47,500 = ₹1,12,500	
Planned profit	= ₹1,60,000	
Increase in profit (or contribution) required	= 1,60,000 – 1,12,500 = ₹47,500	
Variable cost of additional 20,000 pieces (order for 20% capacity, *i.e.*, 20,000 × ₹8.50)		₹1,70,000
Add: Additional contribution desired		₹47,500
Total sales value		₹2,17,500

Selling price per unit = ₹2,17,500 ÷ 20,000 units = ₹10.875

Thus, minimum price for sale of additional 20,000 units is ₹10.875, so as to ensure an overall profit of ₹1,60,000.

NOTES

(d) Pricing of Export Sales

Additional orders may be accepted from a foreign market at below normal price or below total cost but above marginal cost. Export sales yield additional contribution when such sales are at a price which is above marginal cost.

While determining profitability of accepting export orders, the following additional factors should be considered.

1. Export sales may result in additional costs, like special packing cost, additional quality checks, freight and insurance charges, etc., if not borne by importer. These costs should be deducted from contribution to determine profit from export order.
2. Export sales may result in certain cost benefits, like export subsidy from government, exemption or concessions in excise duty or duty drawbacks, etc. In determining profit from export order, these items should be deducted from cost or added in contribution.

Illustration 13.2: Indo-British Company has a capacity to produce 5,000 articles but actually produces only 2,000 articles for home market at the following costs:

			₹
Materials			40,000
Wages			36,000
Factory Overheads	— Fixed		12,000
	— Variable		20,000
Administration overheads	— Fixed		18,000
Selling and distribution overheads	— Fixed		10,000
	— Variable		16,000
		Total Cost	1,52,000

The home market can consume only 2,000 articles at a selling price of ₹80 per article. An additional order for the supply of 3,000 articles is received from a foreign country at ₹65 article. Should this order be accepted or not, if execution of this order entails an additional packing cost of ₹3,000.

Solution:

Statement of Marginal Cost and Contribution
(of 3,000 articles for export)

				₹
	Materials @ ₹20 per article			60,000
	Wages @ ₹18 per article			54,000
	Variable overheads	— Factory @ ₹10 per article		30,000
		— Selling and dist. @ ₹8 per article		24,000
			Marginal cost of sales	1,68,000
	Sales (3,000 articles @ ₹65)			1,95,000
			Contribution	27,000
Less:	Additional packing cost			3,000
			Additional profit	24,000

NOTES

Acceptance of this export order results in additional profit of ₹24,000 and thus the order should be accepted.

Note: Fixed overheads have not been taken into account in deciding the acceptability of this order because fixed overheads have already been recovered from sale in the home market.

Non-cost Factors or Qualitative Factors: Apart from cost and profit considerations, certain non-cost factors should also be kept in mind while making an exporting decision. These include:

(*a*) Foreign exchange earnings

(*b*) Export house status

(*c*) Enhancement in company prestige and goodwill

(*d*) Employment opportunities

Conclusion

1. In normal times, prices should be based on total cost plus profit.
2. In market conditions like trade depression and competition, price may be fixed on marginal cost plus basis so as to make a contribution. This is valid only for a short period.
3. In order to utilize spare plant capacity, bulk orders from home market or from foreign market may be accepted at less than total cost but above marginal cost. This adds to the total profit of the company. This is possible only when price discrimination is such sales in different markets is possible.

13.3.2 Make or Buy Decisions

Marginal cost analysis renders useful assistance when a decision has to be taken by the management on whether a component part should be manufactured internally or purchased from an outside firm. *Insourcing* is producing the goods by the firm itself whereas *outsourcing* is the process of purchasing the goods or services from outside suppliers. For example, a car manufacture may rely on outside vendors to supply some component parts but may choose to manufacture other parts internally.

This is particularly common when a component part is available in the market at a price below firm's own total cost. This type of decision based on total cost analysis may be misleading. Such a decision can be arrived at by comparing the outside supplier's price with firm's own marginal cost. On the face of it, since the only cost to manufacture the component is its marginal cost, then the amount by which marginal cost falls below supplier's price is the saving that arises in making. Therefore, it will be profitable to buy from outside only when supplier's price is below firm's own marginal cost.

For example, total cost of making a component is ₹100 per unit, consisting of ₹80 as variable cost and ₹20 as fixed cost. Suppose, an outside firm is prepared to supply this component at ₹90, it may appear that it is cheaper to buy the

component. But a study of cost analysis will show that each unit if manufactured makes a contribution of ₹20 towards recovery of fixed cost. This fixed cost has to be incurred whether we make or buy. The real cost of making the component part is only ₹80 which is its variable cost. This offer of ₹90 per unit should not be accepted because if accepted, the component will really cost ₹110, *i.e.*, ₹90 of purchase price plus ₹20 of fixed cost which cannot be saved if component is not produced.

However, before arriving at final decision, due consideration should be given to other factors. For example, it should also be considered as to whether plant capacity released by the non-manufacture of the component part is put to some alternative use or not.

Illustration 13.3: Auto Parts Ltd has an annual production of 90,000 units for a motor component. The component cost structure is as below:

Materials	₹270 per unit
Labour (25% fixed)	₹180 per unit
Expenses:	
Variable	₹90 per unit
Fixed	₹135 per unit
Total	₹675 per unit

(*a*) The purchase manager has an offer from a supplier who is willing to supply the component at ₹540. Should the component be purchased and production stopped?

(*b*) Assume the resources now used for this component's manufacture are to be used to produce another new product for which the selling price is ₹485.

In the latter case, the material price will be ₹200 per unit. 90,000 units of this product can be produced at the same cost basis as above for labour and expenses. Discuss whether it would be advisable to divert the resources to manufacture that new product, on the footing that the component presently being produced would, instead of being produced, be purchased from the market.

Solution:

	₹
Material	270
Labour (75% of ₹180)	135
Variable expenses	90
Total variable cost when component is produced	495
Suppliers price	540

Excess of purchase price over variable cost = 540 – 495 = ₹45

(*a*) Fixed expenses have to be incurred whether the component is made or purchased. Thus company should make the component itself because if purchased from outside it will have to pay ₹45 per unit more and on 90,000 units @ ₹45 it comes to ₹40,50,000.

(*b*) Cost implications of proposal to divert available production facilities for a new product:

NOTES

				₹
Selling price of per unit of new product				485
Less: Variable costs —	Material		200	
	Labour		135	
	Expenses		90	425
Contribution per unit				60

Loss if present component is purchased = 540 – 495 = ₹45.

If company diverts the resources for the production of a new product, it will benefit by ₹15 (*i.e.,* ₹60 – 45) per unit.

On 90,000 units it will save @ ₹15, *i.e.,* ₹13,50,000. Thus, it is advisable to divert the production facilities in the manufacture of the new product and the component presently being manufactured should be bought from outside. This will result in additional profit of ₹13,50,000.

Outsourcing and Idle Capacity: When a firm has no spare capacity and manufacturing a component involves setting aside other work, the loss of contribution of displaced work should also be given due consideration. In other words, it will be profitable to buy only when the purchase price is below marginal cost plus loss of contribution of displaced work. The loss of contribution is usually best found by the use of contribution per unit of key factor.

Illustration 13.4: Manufacture of product *A* takes 20 hours on machine no. 101. It has a selling price of ₹150 and marginal cost of ₹110. Component part *Y* could be made on machine no. 101 in 4 hours. The marginal cost of component part is ₹9 of which outside supplier's price is ₹15.

Should one make or buy component *Y*. Discuss in both situations when—

(*a*) Machine no. 101 is working at full capacity.

(*b*) There is idle capacity.

Solution:

(*a*) Contribution per unit of *A* = ₹150 – 110 = ₹40

Contribution per machine hour = ₹40 ÷ 20 hrs = ₹2 per hour.

If component *Y* in manufactured then as it takes 4 hours, the loss of contribution is ₹8 (*i.e.,* 4 hrs @ ₹2). The total cost to make component *Y* will be ₹9 + ₹ 8 = ₹17.

This is more than supplier's price of ₹15 and so it is better to buy than to make component *Y*.

(*b*) If, however, there is some unutilized machine capacity, then there would be no loss of contribution and so the cost of making component *Y* would only be its marginal cost, *i.e.,* ₹9. In such a case, it would be economical to make the product than buy it.

NOTES

Non-cost or Qualitative Factors: While making a decision on make or buy a component, the following non-cost factors should also be considered.

(*a*) Assurance of continued supply, if bought from outside

(*b*) Assurance of quality of the product by the supplier

(*c*) Assurance of no price increase during the period of agreement

13.3.3 Mix of Sale

Sales mix or product mix denotes the proportion in which various products are sold or produced. The problem of selecting a profitable mix of sales thus, arises only when a business enterprise has a variety of product lines and each making a contribution of its own. Any change in sales mix also results in the change in profit position. The technique of marginal costing helps the management in determining the most profitable sale mix.

The discussion on selection of the most profitable product mix may be discussed in two parts:

(*a*) When there is no key factor; and (*b*) When there is a key factor.

(a) *When there is no key (or limiting) factor*

When there is no key factor, the product mix that provides the highest amount of *contribution* is considered as the most profitable sales mix. This holds good when fixed cost does not change due to changes in sales mix.

However, when changes in sales mix are associated with changes in fixed cost, then that sales mix which provides the highest profit is considered as the most profitable sales mix. In other words, relative profitability of mixes will be evaluated on the basis of their profit and not on the basis of their contribution when a change in product mix is associated with change in fixed cost.

Illustration 13.5: Allied Manufacturing Company given you the following information.

	Product A	*Product B*
	₹	₹
Fixed overheads – ₹10,000 p.a.		
Direct materials per unit	20	25
Direct labour per unit	10	15
Variable overheads (100% of direct labour)		
Selling price per unit	60	100

You are required to present a statement showing the marginal cost of each product and recommend which of the following sales mixes should be adopted:

(*a*) 900 units of *A* and 600 units of *B*

(*b*) 1,800 units of *A* only

(*c*) 1,200 units of *B* only

(*d*) 1,200 units of *A* and 400 units of *B*

Solution:

Marginal Cost Statement

	Per unit *Product A* ₹	*Product B* ₹
Direct materials	20	25
Direct labour 10	15	
Variable overheads	10	15
Marginal cost	40	55
Contribution	20	45
Selling price	60	100

Statement of Contributions and Profits of Different Sales Mixes

	Sales mix	*Contribution per unit* ₹	*Contri-bution* ₹	*Total contribution* ₹	*Fixed cost* ₹	*Profit* ₹
(*a*)	*A* – 900 units	20	18,000			
	B – 600 units	45	27,000	45,000	10,000	35,000
(*b*)	*A* – 1,800 units	20	36,000			
	B – Nil	45	Nil	36,000	10,000	26,000
(*c*)	*A* – Nil	20	Nil			
	B – 1,200 units	45	54,000	54,000	10,000	44,000
(*d*)	*A* – 1,200 units	20	24,000			
	B – 400 units	45	18,000	42,000	10,000	32,000

Thus, sales mix (*c*) is recommended as it yields the highest profit of ₹44,000. This is because contribution per unit of *B* is more than that of *A*, and therefore, any sales mix that takes into account the maximum number of units of *B* would be more profitable.

(b) When there is a key factor

When a key factor is operating, selection of the most profitable sales mix is based on contribution per unit of key factor. The product which makes the highest amount of contribution per unit of key factor, is the most profitable one and its production is pushed up. The second preference is to be given to product which yields the second highest contribution per unit of key factor and so on and in the end that product should be produced which yields least contribution per unit of key factor and to the extent of availability of the key factor.

In case a number of key factors are operating simultaneously, the basic principle remains the same but problem becomes more mathematical in nature and one has to resort to Linear Programming to determine the optimal product mix.

NOTES

Illustration 13.6: A company manufactures three products. The budgeted quantity, selling prices and unit costs are as under:

	A ₹	*B* ₹	*C* ₹
Raw materials (@ ₹20 per kg)	80	40	20
Direct wages (@ ₹5 per hour)	5	15	10
Variable overheads	10	30	20
Fixed overheads	9	22	18
Budgeted production (in units)	6,400	3,200	2,400
Selling price per unit (in ₹)	140	120	90

Required:

(*i*) Present a statement of budgeted profit.

(*ii*) Set optimal product mix and determine the profit, if the supply of raw materials is restricted to 18,400 kgs.

Solution:

(*i*) **Statement of Budgeted Profit**

	A	*B*	*C*	*Total* ₹
Budgeted production (units)	6,400	3,200	2,400	
Selling price ₹	140	120	90	
Sales (S)	8,96,000	3,84,000	2,16,000	14,96,000
Raw materials	5,12,000	1,28,000	48,000	
Direct wages	32,000	48,000	24,000	
Variable overheads	64,000	96,000	48,000	
Total variable cost (V)	6,08,000	2,72,000	1,20,000	10,00,000
Contribution (S – V)	2,88,000	1,12,000	96,000	4,96,000
Less: fixed cost*				1,71,200
Profit				3,24,800

*Calculation of Fixed Cost

A = 6,400 unit × ₹9		₹57,600
B = 3,200 units × ₹22		70,400
C = 2,400 units × ₹18		43,200
Total fixed cost	=	₹1,71,200

(*ii*) **When raw material is the key factor**

	A	*B*	*C*
Raw material per unit of output	4 kgs	2 kgs	1 kgs
Total raw material consumed (kg)	6400 × 4 = 25,600	3200 × 2 = 6,400	2400 × 1 = 2,400
*Contribution per kg of raw material	$= \frac{₹2,88,000}{25,600 \text{ kgs}}$ = ₹11.25	$= \frac{₹1,12,000}{6,400 \text{ kgs}}$ = ₹17.50	$= \frac{₹96,000}{2,400 \text{ kgs}}$ = ₹40
Ranks	**III**	**II**	**I**

* Contribution per kg of raw material is calculated as:
Total contribution ÷ Total raw materials consumed

NOTES

Suggested sales mix (raw material is the key factor)

Rank I – Product *C* – 2,400 units × 1 kg	= 2,400 kgs
Rank II – Product *B* – 3,200 units × 2 kgs	= 6,400 kgs
Rank III – Product *A* – 2,400 units × 4 kgs (balance)	= 9,600 kgs
Total materials	18,400 kgs

Thus product mix is: *A* – 2,400 units, *B* 3,200 units and *C* – 2,400 units

Calculation of Profit			*Contribution*
Product	*A*	2,400 units @ ₹45 p.u.	₹1,08,000
	B	3,200 units @ ₹35 p.u.	₹1,12,000
	C	2,400 units @ ₹40 p.u.	₹96,000
	Total contribution		₹3,16,000
	Less: Total fixed cost		₹1,71,200
	Profit		₹1,44,800

13.3.4 Selection of a Suitable Method of Production

Sometimes the management is confronted with the problem of choosing from amongst alternative methods of production. For example, a new product may have been developed and the management is faced with the problem of determining the best method of production, *i.e.*, whether to employ a machine or to produce entirely by hand labour. Similarly, management may have to decide whether to employ an ordinary machine or an automatic machine. The management should select the method which gives the largest contribution (*i.e.*, the lowest marginal cost), keeping in view the limiting factor.

Example: *X* Ltd has developed a new product which can be manufactured on Machine I or II.

		Machine I	*Machine II*
(*a*)	Total machine hours per annum	3,000	3,000
(*b*)	Production per hour	5 units	8 units
		₹	₹
(*c*)	Selling price per unit	200	200
	Material per unit	70	70
	Labour per unit	30	20
	Variable overheads per unit	50	70
(*d*)	Marginal cost per unit	150	160
(*e*)	Contribution per unit (c – d)	50	40
(*f*)	Contribution per hour (e × b)	250	320
(*g*)	Contribution per annum (f × a)	7,50,000	9,60,000

Apparently, machine II is more profitable as it make a larger contribution provided there is no other factor to be considered.

13.3.5 Plant Shutdown Decisions

The management under certain circumstances might feel that plant shutdown, *i.e.*, closing down the business, is better than operating at a loss. However, marginal costing analysis may prove that this is not always so. This type of situation usually arises when sufficient sales cannot be achieved.

NOTES

This type of decision may be either (*a*) temporary suspension of production activities, or (*b*) permanent closing down of production.

Temporary Closing Down: Temporary suspension of activities is a short-term measure. The object is usually to stop operations until trade depression has passed. The question before management is: when should operations be suspended? or in other words, how long should the operations be continued? The answer to this question is that if products are making a contribution towards fixed cost, then generally speaking, production should not be suspended. This is so because continuing production will help minimizing loss which would be incurred if plant is shut down. Thus, the information needed to solve this type of problem involves a comparison between probable loss at a given level of output and the loss that would be suffered if production is suspended temporarily.

Example: A manufacturing company supplies you the following information:

Normal capacity of plant	10,000 units
Fixed cost	₹1,00,000
Marginal cost per unit	₹75
Estimated selling price	₹80
Estimated sales volume at this selling price	5,000 units

Marginal Cost Statement

		₹
	Total sales (5,000 units × ₹80)	4,00,000
Less:	Marginal cost (5,000 units × ₹75)	3,75,000
	Contribution	25,000
	Fixed cost	1,00,000
	Loss	(–) 75,000

If plant is shut down, the loss due to fixed cost would be ₹1,00,000. However, if plant is operated, the loss would only be ₹75,000. This is because selling price is above the marginal cost and is making a contribution towards fixed cost.

Role of Committed and Discretionary Fixed Costs Sometimes, certain fixed costs can be avoided by management when plant is not operative. These are termed as discretionary fixed costs. Committed fixed costs, on the other hand, are those that cannot be avoided even if production is discontinued.

In decisions to close down temporarily, contribution should be compared with fixed cost which is to be incurred when plant is shut down, *i.e.*, committed fixed cost.

Examples of fixed costs which may be avoided by closing down are advertisement costs, research and development, part of salaries, etc. Longer the period of shut down, the larger the amount of avoidable fixed cost is likely to be.

Example:

Normal capacity of plant	10,000 units
Fixed cost when plant is operating	₹1,00,000
Fixed cost when plant is shut down	₹80,000

NOTES

Variable cost per unit	₹75
Selling price per unit	₹80
Estimated sales volume at this price	5,000 units

Marginal Cost Statement

			₹
	Sales (5,000 units @ ₹80)		4,00,000
Less:	Marginal cost (5,000 units @ ₹75)		3,75,000
	Contribution		25,000
	Fixed cost if plant is operating		1,00,000
		Loss	(–) 75,000

Now if the plant is shut down, the loss due to fixed cost would be ₹80,000 whereas, if plant is operated, the loss would be ₹75,000. The effect of plant operating is only a small amount of loss of ₹5,000 (*i.e.,* 80,000 – 75,000). Thus keeping in view this small amount, operating a plant offers certain non-cost advantages like keeping the plant in gear, retaining the customers, retaining all the skilled labour and managerial personnel. Thus, it would be advisable to continue the production even if there is a small amount of loss because the non-cost factors outweigh the loss.

In case the selling price is below the marginal cost and makes no contribution towards fixed cost, then on cost considerations, the plant should be temporarily shutdown. But a final decision in the regard should be taken after considering non-cost factors, like effect of shutdown on plant, fear of losing the market, effect on relationship with workers and suppliers, etc.

Permanent Shutdown: So far as permanent closing down of business is concerned, such a decision is a drastic step and should be taken only when in the long run, the business does not expect to earn a sufficient return to cover the risk involved. In other words, in the long-run, selling price must not only cover the total cost but should also give a reasonable return on the capital employed.

13.3.6 Level of Activity Planning

To understand the concept of decision making in terms of level of activity planning, the concept of differential cost needs to be introduced. Differential cost analysis is a special technique to help management in decision making which shows how costs and revenues would be different under different alternative courses of action. It is obtained by subtracting the cost of one alternative from the cost of the other alternative. For example, when management is considering a change in the level of production, differential cost will be calculated by substracting the cost at lower level of production from that of a higher level.

Determination of the Optimum Level of Production

The optimum level is that level of production where profit is the maximum. In order to arrive at a decision of this type, the differential costs are compared with

incremental revenue at various levels of output. So long as the incremental revenue exceeds differential costs, it is profitable to increase the output. But as soon as the differential cost equals or exceeds incremental revenue, it is no more profitable to increase the volume of output.

Illustration 13.7: A company has a capacity of producing 1,00,000 units of a certain product in a month. The sales department reports that the following schedule of sale prices is possible:

		Volume of production			*Selling price per unit ₹*
At	60%	capacity	60,000	units	0.90
At	70%	capacity	70,000	units	0.80
At	80%	capacity	80,000	units	0.75
At	90%	capacity	90,000	units	0.67
At	100%	capacity	1,00,000	units	0.61

Variable cost of manufacture is 15 paise per unit and total fixed cost ₹40,000.

Prepare a statement showing incremental revenue and differential cost of each stage. At which volume of production will the profit be maximum?

Solution:

Statement of Differential Cost and Incremental Revenue

Capacity	*Units of output*	*Variable cost @ ₹0.15* ₹	*Fixed cost* ₹	*Total cost* ₹	*Differential cost* ₹	*Sales* ₹	*Incre-mental revenue* ₹
60%	60,000	9,000	40,000	49,000	—	54,000	—
70%	70,000	10,500	40,000	50,500	1,500	56,000	2,000
80%	80,000	12,000	40,000	52,000	1,500	60,000	4,000
90%	90,000	13,500	40,000	53,500	1,500	60,300	300
100%	1,00,000	15,000	40,000	55,000	1,500	61,000	700

At 80% volume of production, profit is maximum. This is because at this level, incremental revenue is ₹4,000 whereas, differential cost is ₹1,500, resulting in additional profit of ₹2,500 (*i.e.*, ₹4,000 – 1,500). After 80% level, differential cost exceeds incremental revenue thereby resulting in a loss.

Check Your Progress

4. What should the selling price be fixed according to in the short run under normal circumstances?
5. List the non-cost factors that should be considered while making a decision on make or buy a component.
6. When does the problem of selecting a profitable mix of sales arise?

NOTES

13.4 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. Every rational decision making process begins with the identification of the problem.
2. To discharge the function of evaluation of alternatives effectively, a management accountant needs to possess knowledge about a number of tools and techniques like profit planning, capital budgeting, risk techniques, linear programming, decision tree and forecasting techniques.
3. Relevant costs and revenues should have the following two characteristics:
   - The costs and revenues must relate to the future; and
   - They must differ among different courses of action.
4. In the short run, the selling price may have to be fixed below total cost but it should be above variable cost. In other words, the selling price may be temporarily fixed at marginal cost ply contribution basis and the amount of contribution depends upon demand and supply, acuteness of competition, non cost factors etc.
5. While making a decision on make or buy a component, the following non-cost factors should also be considered:
   a) Assurance of continued supply, if bought from outside
   b) Assurance of quality of the product by the supplier
   c) Assurance of no price increase during the period of agreement
6. The problem of selecting a profitable mix of sales arises only when a business enterprise has a variety of product lines and each making a contribution of its own.

13.5 SUMMARY

- Decision making being one of the basic functions of a manager takes place at every level in the organization.
- Decision making is the process of making choices between alternative courses of action.
- The systematic approach in decision making consists of the following steps: identification and analysis of the problem, identification of alternatives, evaluation of alternatives, selection of an alternative, detailed plan for carrying out of the alternative; and evaluation and control.
- When management makes decisions, it has to concentrate on relevant costs and relevant revenues. The relevant costs and revenues are those expected future costs and expected future revenues that differ under different alternative courses of action being considered.

- Although prices are regulated more by market conditions of demand and supply and other economic factors than by the decisions of the management, the management while fixing prices has to keep in view the level of profit desired. Such conditions may be like the following: under normal circumstances, in times of competition and/or trade depression, additional bulk orders, and pricing of export sales.
- Marginal cost analysis renders useful assistance when a decision has to be taken by the management on whether a component part should be manufactured internally or purchased from an outside firm.
- The technique of marginal costing helps the management in determining the most profitable sale mix, choosing from amongst alternative methods of production or deciding whether shutdown decisions must be taken.

13.6 KEY WORDS

- **Decision making:** It is the process of making choices between alternative courses of action.
- **Cost factors or quantitative factors:** It refers to those factors which can be quantified in monetary terms.
- **Non-cost or qualitative factors:** It refers to those factors which cannot be expressed in monetary terms with accuracy.
- **Sales mix:** It denotes the proportion in which various products are sold or produced.

13.7 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. Write short notes on the relevant costs, relevant revenues, cost and non cost factors in decision making.
2. What is the selection of a suitable method of production?
3. Briefly explain the plant shutdown decisions.
4. How is the level of activity planning decision made?

Long-Answer Questions

1. Explain the steps involved in the process of decision making.
2. Describe the conditions which affect the pricing decisions.
3. Examine in detail the considerations to be made in make or buy decisions.
4. Assess the mix of sale decision.

NOTES

5. A company producing 24,000 units provides you the following information:

		₹
Direct material		1,20,000
Direct wages		84,000
Variable overheads		48,000
Semi-variable overheads		28,000
Fixed overheads		80,000
	Total cost	3,60,000

The product is sold at ₹20 per unit.

The management proposes to increase the production by 3,000 units for sales in the foreign market. It is estimated that the semi-variable overheads will increase by ₹1,000. But the product will be sold at ₹14 per unit in the foreign market. However, no additional capital expenditure will be incurred. The management seeks your advice as a cost accountant. What will you advise them?

---

7. *XY* Ltd manufactures auto parts. The following costs are incurred for processing 1,00,000 units of a component:

Direct material cost	₹5 lakh
Direct labour cost	₹8 lakh
Variable factory overheads	₹6 lakh
Fixed factory overheads	₹5 lakh

The purchase price of the component is ₹22. The fixed overheads would continue to be incurred even when the component is bought from outside although there would be reduction to the extent of ₹2 lakh.

Required:

(1) Should the part be made or bought, considering that the present facility when released following a buying decision would remain idle?

(2) In case the released capacity can be rented out to another company for ₹1,50,000, what would be the decision?

8. A multi-product company provides the following costs and output data for the last year.

	Products			
	X	*Y*	*Z*	
Sales mix	40%	35%	25%	
	₹	₹	₹	
Selling price	20	25	30	
Variable cost per unit	10	15	18	
Total fixed cost				₹1,50,000
Total sales				₹5,00,000

The company proposes to replace Product *Z* by Product S. Estimated cost and output data are:

	X	*Y*	*S*
Sales mix	*50%*	*30%*	*20%*
	₹	₹	₹
Selling price	20	25	28
Variable cost per unit	10	15	14
Total fixed cost			₹1,50,000
Total sales			₹5,00,000

Analyse the proposed change and suggest what decision the company should take. (*ICWA Inter*)

13.8 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice*, 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management,* 4th edition. New Delhi: Vikas Publishing House.

UNIT 14 BREAK-EVEN ANALYSIS

NOTES

Structure

14.0 INTRODUCTION

Cost-volume-profit analysis (CVP analysis) is an extension of the principles of marginal costing. It studies the interrelationship of three basic factors of business operations:

(a) Cost of production

(b) Volume of production/sales

(c) Profit

These three factors are interconnected in such a way that they act and react on one another because of cause and effect relationship amongst them. The cost of a product determines its selling price and the selling price determines the level of profit. The selling price also affects the volume of sales which directly affects the volume of production and volume of production in turn influences cost. In brief, variations in volume of production results in changes in cost and profit. CIMA London has defined CVP analysis as, 'the study of the effects on future profits of changes in fixed cost, variable cost, sales price, quantity and mix.'

An understanding of CVP analysis is extremely useful to management in budgeting and profit planning. It explains the impact of the following on the net profit:

(a) Changes in selling prices

(b) Changes in volume of sales

(c) Changes in variable cost

(d) Changes in fixed cost

In fact, CVP analysis helps in determining the probable effect of change in any one of these factors on the remaining factors.

In this unit, you will study the concept of break-even analysis in detail.

NOTES

14.1 OBJECTIVES

After going through this unit, you will be able to:

- Explain the meaning and assumptions of break even analysis
- Describe the algebraic and chart methods of computing break-even point
- Examine the P/V ratio and margin of safety
- Discuss the advantages and limitations of marginal costing
- Compare marginal and differential cost analysis

14.2 BREAK-EVEN MEANINGS AND ASSUMPTIONS

Break-even analysis is a widely-used technique to study the CVP relationship. It is interpreted in narrow as well as broad sense.

In its narrow sense, break-even analysis is concerned with determining break-even point, i.e., that level of production and sales where there is no profit and no loss. At this point total cost is equal to total sales revenue.

When used in broad sense, break-even analysis is used to determine probable profit/loss at any given level of production/sales. It is also used to determine the amount of sales to earn a desired amount of profit.

Assumptions underlying Break-even Analysis

The break-even analysis is based on the following assumptions:

1. All costs can be separated into fixed and variable components.
2. Variable cost per unit remains constant and total variable cost varies in direct proportion to the volume of production.
3. Total fixed cost remains constant.
4. Selling price per unit does not change as volume changes.
5. There is only one product or in the case of multiple products, the sales mix does not change. In other words, when several products are being sold, the sale of various products will always be in some predetermined proportion.
6. There is synchronization between production and sales. In other words, volume of production equals volume of sales.
7. Productivity per worker does not change.
8. There will be no change in the general price level.

NOTES

14.2.1 Algebraic Calculation

Break-even point: The break-even point is the volume of output or sales at which total cost is exactly equal to sales. It is a point of no profit and no loss. This is the minimum point of production at which total cost is recovered and after this point profit begins.

The fundamental formula to calculate break-even point is:

$$\text{Break-even point (in units)} = \frac{\text{Total fixed cost}}{\text{Contribution per unit}} = \frac{F}{S-V}$$

$$\text{Break-even point (in Rupees)} = \frac{\text{Total fixed cost}}{\text{Contribution}} \times \text{Sales} = \frac{F \times S}{S-V}$$

or $$\text{Break-even point (in Rupees)} = \frac{\text{Total fixed cost}}{\text{P/V ratio}}$$

Example: Following data is given:

Total fixed cost = ₹12,000
Selling price = ₹12 per unit
Variable cost = ₹9 per unit

Thus:

Contribution = S – V
= 12 – 9 = ₹3 per unit

P/V ratio $= \frac{C}{S} \times 100 = \frac{3}{12} \times 100 = 25\%$

$$\text{Break-even point (in units)} = \frac{\text{Fixed cost}}{\text{Contribution per unit}} = \frac{12,000}{3} = 4,000 \text{ units}$$

$$\text{Break-even point (in ₹)} = \frac{\text{Total fixed cost}}{\text{Contribution}} \times \text{Sales}$$

$$= \frac{12,000}{3} \times 12 = ₹48,000$$

Also,

$$\text{Break-even point (in ₹)} = \frac{\text{Total Fixed cost}}{\text{P/V ratio}} = \frac{₹12,000}{25\%} = ₹48,000$$

Verification

Break-even point may be verified as follows:

Total cost = Fixed cost + Variable cost
Total cost = ₹12,000 + (4,000 units × ₹9)
= ₹48,000

The sales value and total cost at break-even point are exactly equal.

Additional Calculations

In addition to the calculation of break-even point, the above formula can also be used in making certain additional calculations. These are:

1. Calculation of profit at different sales volumes
2. Calculation of sales for desired profit
3. Finding missing figures

NOTES

Example: The following data is given:

Fixed cost = ₹12,000 (total)
Selling price = ₹12 per unit
Variable cost = ₹9 per unit

Calculation of profit at different sales volumes: What will be the profit when sales are (a) ₹60,000 (b) ₹1,00,000?

$$\text{P/V ratio} = \frac{C}{S} = \frac{3}{12} = 25\%$$

(a) When sales = ₹60,000

Contribution = Sales × P/V ratio

= ₹60,000 × 25% = ₹15,000

Profit = Contribution – Fixed cost

= ₹15,000 – ₹12,000 = ₹3,000

(b) When sales = ₹1,00,000

Contribution = ₹1,00,000 × 25% = ₹25,000

Profit = ₹25,000 – ₹12,000 = ₹13,000

Calculation of sales for desired profits Continuing the same figures, what will be the amount of sales if it is desired to earn a profit of (a) ₹6,000; (b) ₹15,000?

$$\text{Sales for desired profit} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{P/V ratio}}$$

(a) $$= \frac{₹12,000 + ₹6,000}{25\%} = ₹72,000$$

(b) $$= \frac{₹12,000 + ₹15,000}{25\%} = ₹1,08,000$$

Calculation of missing figures

Example:

Given: Break-even point = ₹30,000
Profit = ₹1,500
Fixed cost = ₹6,000

What is the amount of variable cost?

NOTES

Solution:

Contribution = Fixed cost + profit

= ₹6,000 + ₹1,500 = ₹7,500

$$\text{Break-even point} = \frac{\text{Fixed cost}}{\text{Contribution}} \times \text{Sales}$$

$$₹30,000 = \frac{6,000}{7,500} \times \text{Sales}$$

$$\text{Sales} = \frac{7,500}{6,000} \times 30,000 = ₹37,500$$

$$\text{P/V ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{7,500}{37,500} \times 100 = 20\%$$

Variable cost = 100 – P/V ratio

Variable cost = 100 – 20% = 80% (of sales)

∴ Variable cost (80% of sales) = ₹37,500 × 80% = ₹30,000

Variable cost at break-even sales = ₹30,000 × 80% = ₹24,000

Also, variable cost at Break-even sales= 30,000 – Fixed cost

= 30,000 – 6,000 = ₹24,000.

Example:

Sales = 4,000 units @ ₹10 per unit

Break-even point = 1,500 units

Fixed cost = ₹3,000

What is the amount of (a) variable cost; and (b) profit?

Solution:

$$\text{Break-even point (in units)} = \frac{\text{Fixed cost}}{\text{Contribution per unit}}$$

$$1,500 = \frac{₹3,000}{\text{Contribution per unit}}$$

$$\text{Contribution per unit} = \frac{₹3,000}{1,500 \text{ units}} = ₹2$$

(a) Variable cost = Selling price – Contribution

= ₹10 – ₹2 = ₹8 per unit

Contribution at sales of 4,000 units = 4000 units × ₹2 = ₹8,000

(b) Profit = Contribution – Fixed cost

= ₹8,000 – ₹3,000 = ₹5,000

NOTES

Example:

Given:

Fixed cost	₹8,000
Profit earned	₹2,000
Break-even sales	₹40,000

What is the actual sales ?

Solution:

Contribution at break-even point is equal to fixed cost.

Thus, $\text{P/V ratio} = \frac{C}{S} = \frac{8,000}{40,000} = 20\%$

$$\text{Actual Sales} = \frac{\text{Fixed cost + Profit}}{\text{P/V ratio}}$$

$$= \frac{8,000 + 2,000}{20\%} = \frac{10,000}{20\%} = ₹50,000$$

Example:

Selling price	– ₹ 150 per unit
Variable cost	– ₹ 90 per unit
Fixed cost	– ₹6,00,000 (total)

What is the break-even point?

What is the selling price per unit if break-even point is 12,000 units?

Solution:

$$\text{Break-even point} = \frac{\text{Fixed cost}}{\text{Contribution per unit}}$$

$$= \frac{6,00,000}{150 - 90} = \frac{6,00,000}{60} = 10,000 \text{ units}$$

When break-even point is 12,000 units, contribution is calculated as under:

$$12,000 = \frac{6,00,000}{\text{Contribution}}$$

$$\text{Contribution} = \frac{₹6,00,000}{12,000 \text{ units}} = ₹50$$

$$C = S - V$$
$$50 = S - 90$$
$$S = 50 + 90$$
$$S = ₹140$$

Thus, selling price is ₹140 when break-even point is 12,000 units.

14.2.2 Chart and Graph

NOTES

Break-even chart is a graphic presentation of break-even analysis. This chart takes its name from the fact that the point at which the total cost line and the sales line intersect is the break-even point. A break-even chart not only shows the break-even point but also shows profit and loss at various levels of activity. Thus, a break-even chart portrays the following information:

(*i*) Break-even point—the point at which neither profit nor loss is made

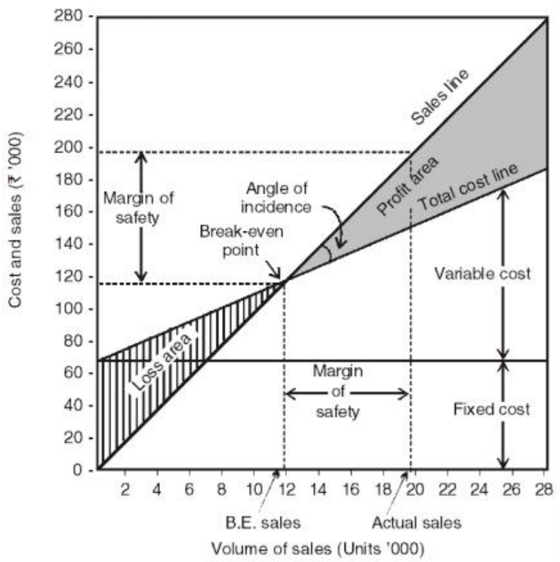
(*ii*) The profit/loss at different levels of output

(*iii*) The relationship between variable cost, fixed cost and total cost

(*iv*) The margin of safety

(*v*) The angle of incidence, indicating the rate at which profit is being made

(*vi*) The amount of contribution at various levels of sales. (this can be shown only on a specially designed 'contribution break-even chart.')



Break-even Chart

Angle of Incidence

This angle is formed by the intersection of sales line and total cost line at the break-even point (*see* Fig. 14.1). This angle shows the rate at which profits are being earned once the break-even point has been reached. The wider the angle, the greater is the rate of earning profits. Therefore, the aim of management will be to have as large an angle as possible.

NOTES

The angle of incidence is of particular importance in boom periods when sales are expanding. Taking in conjunction with margin of safety, therefore, a large angle of incidence with a high margin of safety indicates and extremely favourable position.

Construction of Break-even Chart

The principal steps in the construction of a break-even chart are as follows:

1. **Select a scale on X-axis:** The X-axis is a horizontal base line which is drawn and spaced into equal distances to represent any one or more of the following factors:
   (*i*) Volume of output (units)
   (*ii*) Volume of output (in rupee value)
   (*iii*) Volume of sales (units)
   (*iv*) Volume of sales (in rupee value)
   (*v*) Production capacity (in percentage)
2. **Select scale on Y-axis:** The Y-axis is a vertical line at the extreme left of the chart which is spaced into equal distances. On this Y-axis, it is usual to show cost and sales in rupee value.
3. **Draw the fixed cost line:** This is drawn parallel to X-axis, starting from an appropriate point on Y-axis. For example, when fixed cost is ₹ 30,000, it will be plotted as is shown in Fig. 14.2.
4. **Draw the total cost line:** The variable cost is depicted in the chart by super-imposing it on the fixed cost line. Thus a total cost line is drawn starting from the point on the *Y*-axis which represents fixed cost. For example, when total variable cost is ₹ 50,000 (fixed cost being '30,000), a total cost line is drawn from ₹ 30,000, the fixed cost point of Y-axis, to the '80,000 cost point on the right side of the Y-axis. This is shown in Fig. 14.3.
5. **Drawn the sales line:** This line starts from the 0 point at the left (the intersection of X-axis and Y-axis, where there is no production at a nil cost) and extends to the point of maximum or any other sales value. Further assuming sales ₹ 1,00,000 (Fixed cost ₹ 30,000, variable cost ₹ 50,000), the sales line will be drawn from 0 point at the left to the ₹ 1,00,000 point on the right Y-axis. This is illustrated in Fig. 14.4.

   The sales line intersects the total cost line at break-even point representing ₹ 60,000 sales and output.

NOTES

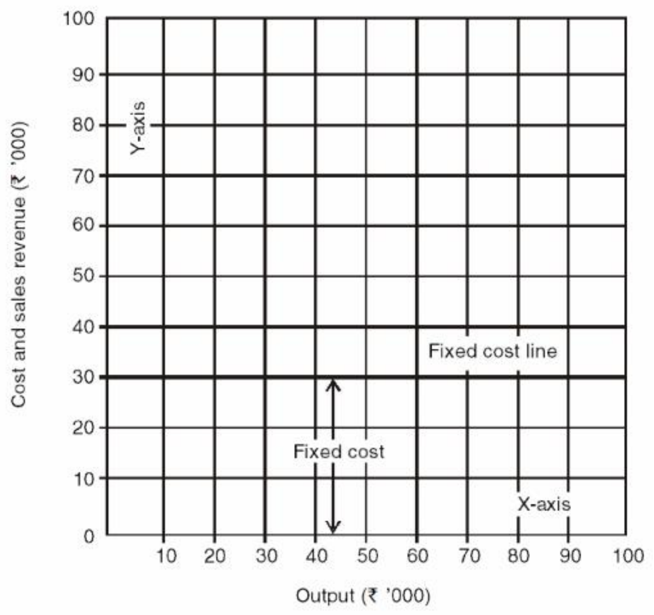


Fig. 14.1 *Break-even Chart Steps 1, 2 and 3*

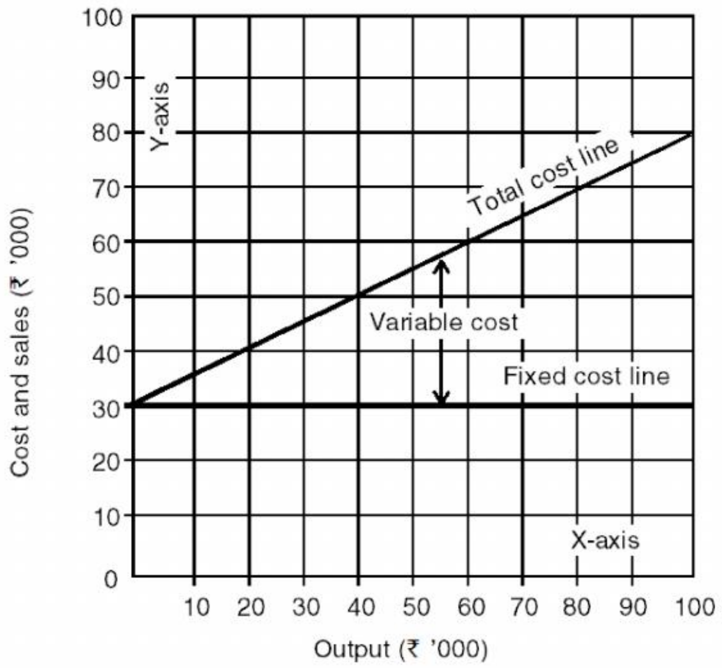


Fig. 14.2 *Break-even Chart Step 4*

NOTES

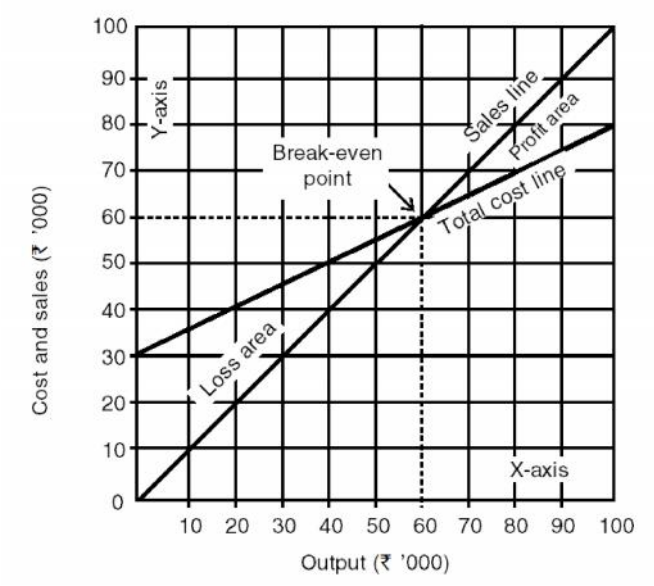


Fig. 14.3 *Break-even Chart Step 5*

Illustration 14.1:

The following data is supplied:

Fixed cost	₹ 40,000
Variable cost	₹ 60,000
Sales	₹ 1,40,000
Sales/production	1,40,000 units

Draw a break-even chart.

Solution:

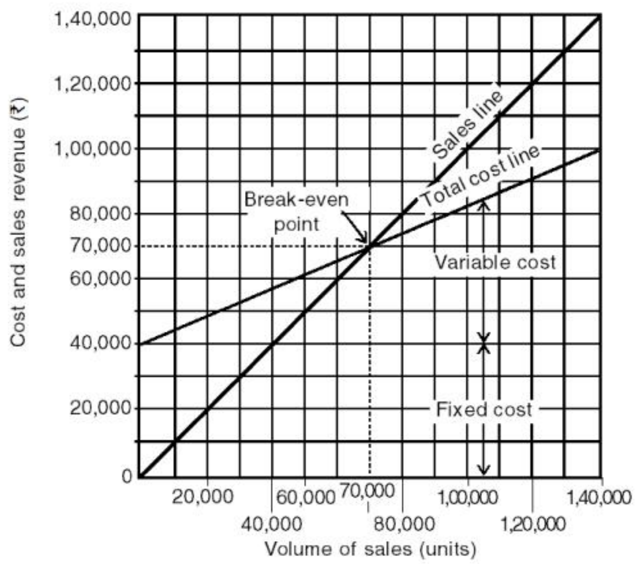


Fig. 14.4 *Break-even Chart*

NOTES

The break-even point in the above break-even chart is at ₹70,000.

This is verified by the following calculations:

$$\text{Break-even point } \frac{\text{Fixed cost}}{\text{Contribution}} \times \text{Sales}$$

Contribution = $S - V$

= ₹1,40,000 – ₹60,000 = ₹80,000

$$\text{Break-even point} = \frac{40{,}000}{80{,}000} \times 1{,}40{,}000 = ₹\mathbf{70{,}000}$$

Contribution Break-even Chart

This is an alternate form of break-even chart and shows the amount of contribution at different levels of output. In such charts, variable cost is drawn first and fixed cost is super-imposed on the variable cost line. The shaded space between total variable cost and sales line represents contribution. This is shown in Fig. 14.5 with the amounts of the Illustration 14.1.

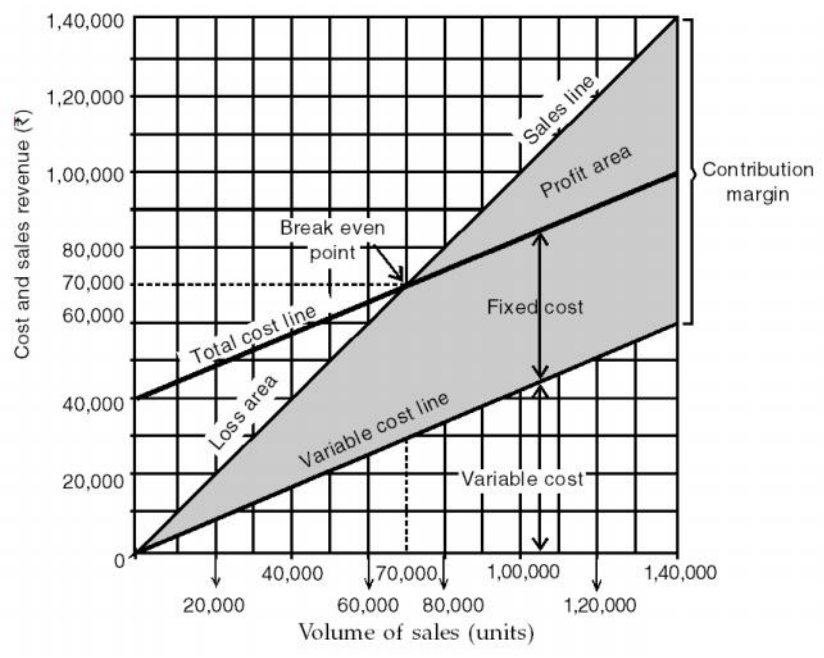


Fig. 14.5 *Contribution Break-even Chart*

Analytical Break-even Chart

This type of break-even chart can be constructed to show greater details by breaking down fixed and variable costs into sub-classifications. Fixed costs, for example, may be divided into fixed factory overheads and fixed administration, selling and distribution overheads. Similarly, variable costs may be classified into

direct materials, direct labour, variable factory overheads, variable administrative, selling and distribution overheads. Even profit area may be subdivided, indicating appropriation of profit to income tax, interest and dividend payments, reserves, etc. This type of break-even chart will appear as shown in Fig. 14.6.

NOTES

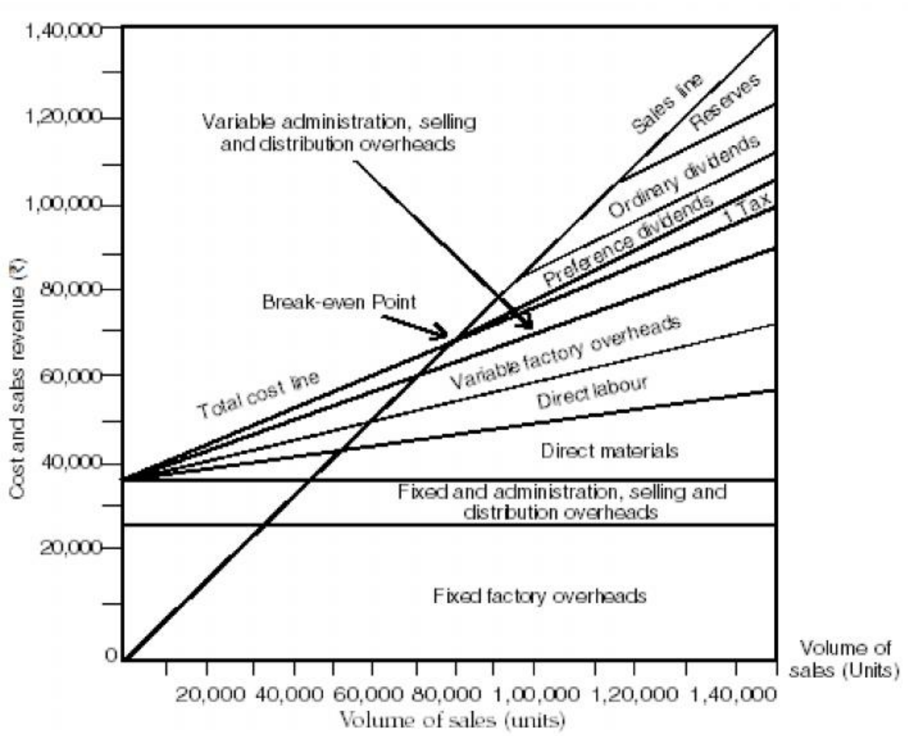


Fig. 14.6 *Analytical Break-even Chart with Assumed Data*

Profit-Volume Chart

The profit-volume chart or profit graph portrays the profit and loss at different levels of sales and is an alternative presentation of the facts illustrated in the break-even chart. Such a chart can be constructed from the same basic data from which a break-even chart can be drawn.

Construction of Profit-Volume Chart

The following steps should be taken to construct a profit-volume chart.

1. **Select a scale on horizontal axis:** The horizontal axis in the profit-volume graph represents sales. This horizontal line, known as sales line, divides the graph into two parts.
2. **Select a scale on vertical axis:** The vertical axis shows fixed cost and profit.

   The fixed costs are market below the sales line on the left hand vertical line and profit is shown above the sales line on the right hand vertical line.

NOTES

3. **Plot fixed cost and profit:** Points are plotted for the given fixed cost and profit. These points are connected by a diagonal line which crosses the sales line at break-even point.

Example: Fixed cost ₹5,000

Sales ₹20,000 (1,000 units @ ₹20)

Variable cost ₹10,000 (1,000 units @ ₹10)

Calculations

$$\text{Profit-Volume ratio} = \frac{S-V}{S} = \frac{20{,}000-10{,}000}{20{,}000} \times 100 = 50\%$$

$$\text{Break-even point} = \frac{\text{Fixed cost}}{\text{P/V ratio}} = \frac{₹5{,}000}{50\%} = ₹10{,}000$$

Profits = $S - F - V$ = 20,000 – 5,000 – 10,000 = ₹5,000

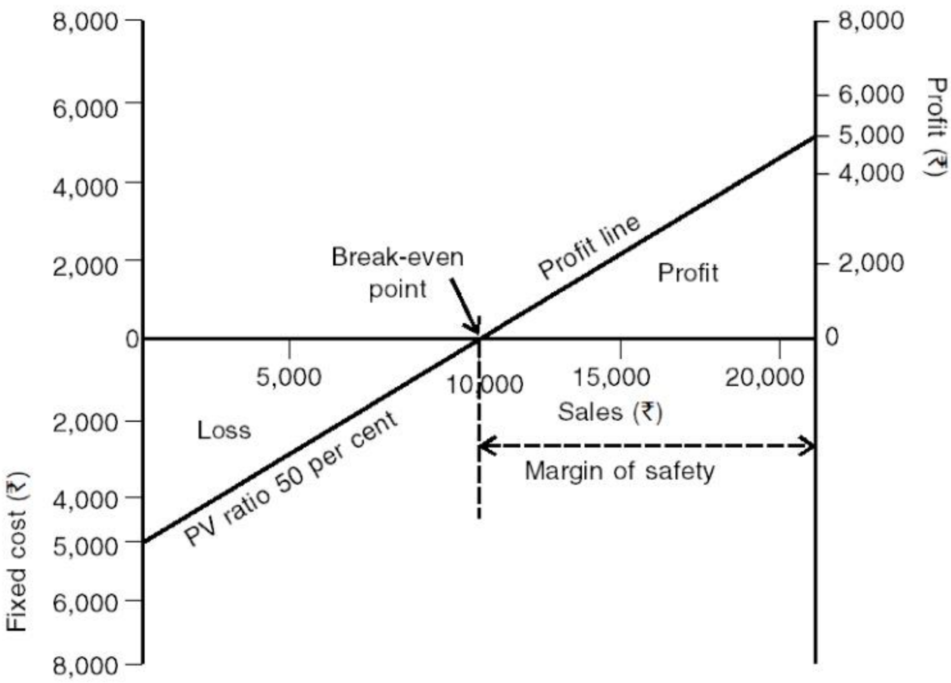


Fig. 14.7 *Profit-Volume Chart*

Check Your Progress

1. Define break-even analysis in the narrow sense.
2. What does the angle of incidence show?

14.3 P/V RATIO AND MARGIN OF SAFETY

NOTES

The profit/volume ratio, better known as contribution/sales ratio (C/S ratio), expresses the relation of contribution to sales.

Symbolically, P/V ratio = $\text{P/V ratio} = \frac{\text{Contribution}}{\text{Sales}} = \frac{C}{S} = \frac{S-V}{S}$

By transposition, we have

(i) C = S × P/V ratio

(ii) S = $\frac{C}{\text{P/V ratio}}$

Example:

Sales = ₹10,000

Variable cost = ₹8,000

Then P/V ratio = $\frac{C}{S} = \frac{S-C}{S} = \frac{10,000-8,000}{10,000} = \frac{2,000}{10,000} = \frac{2}{10}$

When expressed in percentage, P/V ratio = × 100 = 20%.

When P/V ratio is given, the contribution can be quickly calculated from any given level of sales. In the above example, if only sales and P/V ratio were given, contribution could be calculated as under:

C = S × P/V ratio

C = 10,000 × 20% = ₹2,000

P/V ratio may also be computed by comparing the change in contribution to change in sales (or change in profit to change in sales.) Any increase in profit will mean increase in contribution because fixed costs are assumed to remain constant at all levels of production. Thus:

$$\text{P/V ratio} = \frac{\text{Change in contribution}}{\text{Change in sales}} = \frac{\text{Change in profit}}{\text{Change in sales}}$$

Example:

Year	Sales	Net Profit
	₹	₹
2011	20,000	1,000
2012	22,000	1,600

$$\text{P/V ratio} = \frac{\text{Change in profit}}{\text{Change in sales}} = \frac{1,600-1,000}{22,000-20,000} \times 100 = \frac{600}{2,000} \times 100 = 30\%$$

NOTES

Uses of P/V ratio

P/V ratio is one of the most important ratios to watch in business. It is an indicator of the rate at which profit is being earned. A high P/V ratio indicates high profitability and a low ratio indicates low profitability in the business. The profitability of different sections of the business such as sales areas, classes of customers, product lines, methods of production, etc., may also be compared with the help of profit-volume ratio. The P/V ratio is also used in making the following type of calculations:

(a) Calculation of break-even point
(b) Calculation of profit at a given level of sales
(c) Calculation of the volume of sales required to earn a given profit
(d) Calculation of profit when margin of safety is given
(e) Calculation of the volume of sales required to maintain the present level of profit, if selling price is reduced

Improvement in P/V Ratio

As P/V ratio indicates the rate of profitability, any improvement in this ratio without increase in fixed cost would result in higher profits. As a note of caution, erroneous conclusions may be drawn by mere reference to P/V ratio. therefore, this ratio should not be used in isolation.

P/V ratio is the function of sales and variable cost. Thus, it can be improved by widening the gap between sales and variable cost. This can be achieved by:

(a) Increasing the selling price
(b) Reducing the variable cost
(c) Changing the sales mix, i.e., selling more of those products, which have larger P/V ratio, thereby improving the overall P/V ratio.

Margin of Safety

Margin of safety may be defined as the difference between actual sales and sales at break-even point. In other words, it is the amount by which actual volume of sales exceeds the break-even point. Margin of safety may be expressed in absolute money terms or as a percentage of sales. Thus,

M/S = Actual sales – Break-even point

NOTES

Example:

	Company X	Company Y
Actual sales	₹1,20,000	60,000
Less: Break-even point	₹40,000	40,000
Margin of safety	₹80,000	20,000
Margin of safety as a % of sales	$= \frac{80,000}{1,20,000} \times 100$	$= \frac{20,000}{60,000} \times 100$
	$= 66\frac{2}{3}\%$	$= 33\frac{1}{3}\%$

The size of the margin of safety indicates soundness of a business. When margin of safety is large, it means the business can still make profits even after a serious fall in sales. In such a situation, the business stands better chance of survival in times of depression.

A large margin of safety usually indicates low fixed costs. When margin of safety is low, any loss of sales may be a matter of a serious concern.

Margin of safety is directly related to profit. This is shown below:

Profit = Margin of safety × Profit/volume ratio

P = M/S × P/V ratio

Thus M/S $= \frac{P}{P/V \text{ ratio}}$

If profit is 10% and P/V ratio is 40%, then

M/S $= \frac{10\%}{40\%} = 25\%$

When actual sales are given—

Profit = M/S ratio × P/V ratio × Actual sales

When profit is not known but M/S is known, then

P = M/S × P/V ratio

P = 25% × 40% = 10%

Illustration 14.2:

Calculate margin of safety in each of the following independent situations:

(i) Break-even point 40%, Actual sales ₹40,000

(ii) Actual sales – 40,000 units, Break-even point 25,000 units

(iii) Break-even point – 75%

(iv) P/V ratio 40%, Profit ₹35,000

(v) Contribution per unit ₹20, Profit ₹15,000

Solution:

NOTES

(i) Margin of safety = Actual sales – B.E. Point

= ₹40,000 – 40% = ₹24,000

(ii) Margin of safety = Actual sales – B.E. point

= 40,000 units – 25,000 units = 15,000 units

(iii) Margin of safety = 100 – B.E. Point = 100 – 75% = 25%

(iv) Margin of safety = $\frac{\text{Profit}}{\text{P/V ratio}} = \frac{3,500}{40\%} =$ ₹87,500

(v) Margin of safety = $\frac{\text{Profit}}{\text{Contribution per unit}} = \frac{15,500}{20\%}$ = 750 units

Improvement in M/S: When margin of safety is not satisfactory, the following steps may be taken to improve it:

(a) Increase the volume of sales; (b) Increase the selling price; (c) Reduce fixed cost; (d) Reduce variable cost; (e) Improve sales mix by increasing the sales of products with larger P/V ratio.

The effect of a price reduction is always to reduce P/V ratio, raise the break-even point and shorten the margin of safety.

This is illustrated on the following page:

Example:

Suppose price is reduced from ₹75 to ₹60, variable cost ₹50 per unit, fixed cost 10,000, calculate margin of safety.

	Beforeprice reduction ₹	After price reduction ₹
Selling price per unit (S)	75	60
Variable cost per unit (V)	50	50
Total fixed cost (F)	10,000	10,000
Contribution (S – V)	25	10
P/V ratio	$\frac{25}{75} = \mathbf{\frac{1}{3}}$	$\frac{10}{60} = \mathbf{\frac{1}{6}}$
Break-even point $\left(\frac{F}{P/V\ ratio}\right)$	$= \frac{10,000}{1/3}$	$= \frac{10,000}{1/6}$
	= 30,000	= 60,000
Actual sales (assumed)	75,000	75,000
M/S (Actual sales – B.E. Point)	75,000 – 30,000	75,000 – 60,000
= 45,000	= 15,000	

NOTES

Illustration 14.3:

The P/V ratio of X Ltd. is 50% and margin of safety is 40%. The company sold 500 units for ₹5,00,000% you are required to calculate.

(i) Breaker even point, and

(ii) Sales in units to earn a profit of 10% on sales.

Solution:

(i) Sales 500 units @ ₹1000 = ₹5,00,000

Break even point = Sales – Margin of safety

B.E. point = 5,00,000 – 40% = ₹3,00,000

B.E. point in units = ₹3,00,000 ÷ ₹1,000 = 300 units

(ii) Sales to earn 10% profit on sales

Fixed cost = Sales at B.E. point × P/V ratio

= ₹3,00,000 × 50% = ₹1,50,000

Variable cost = Sales – Fixed cost

= 3,00,000 – 1,50,000 = ₹1,50,000

Variable cost per unit = ₹1,50,000¸300 units = ₹500.

Suppose number of units to be sold to earn 10% profit on sales = x

Thus sales = F.C. + V.C. + Profit

1000x = 1,50,000 + 500x + 100x

400x = 1,50,000

x = 1,50,000 ÷ 400 = 375 units

Check Your Progress

3. What does a high P/V ratio indicate?
4. What are the ways in which margin of safety may be expressed?

14.4 ADVANTAGES AND LIMITATIONS OF MARGINAL COSTING

The following advantages are claimed for marginal costing over total absorption costing:

1. **Help in managerial decisions:** The most important advantage of marginal costing is the assistance that it renders to management in taking many valuable

NOTES

decisions. Information regarding marginal cost and contributions provided by marginal costing facilitates making policy decisions in problems, like fixing selling prices below cost, make or buy, introduction of a new product line, utilization of spare plant capacity, selection of the most profitable product mix, etc. This has been discussed in detail later, in a separate unit.

2. **Cost control:** Greater control over cost is possible. This is so because by classifying costs into fixed and variable, the management can concentrate more on the control of variable costs which are generally controllable and pay less attention to fixed costs which may be controlled only by the top management and that too, to a limited extent.
3. **Simple technique:** Marginal costing is comparatively simple to operate because it avoids the complications involved in allocation, apportionment and absorption of fixed overheads which is, in fact, arbitrary division of indivisible fixed costs.
4. **No under and over-absorption of overheads:** In marginal costing, there is no problem of under or over-absorption of overheads.
5. **Constant cost per unit:** Marginal costing takes into account only variable costs which remain the same per unit of product, irrespective of the volume of output. It therefore avoids the effect of varying cost per unit as it ignores fixed costs which are incurred on a time basis and have no relation with the size of production.
6. **Realistic valuation of stocks:** In marginal costing, stocks of work-in-progress and finished goods are valued only at variable costs. Thus no fictitious profits can arise due to fixed cost being absorbed and capitalized in unsold stock. This is because marginal costing prevents the carry forward in stock valuation of some portion of current year's fixed costs. Stock valuation in marginal costing, is, therefore more realistic and uniform.
7. **Aid to profit planning:** To aid profit planning marginal costing technique enables data to be presented to management in such a way as to show cost-volume-profit relationship. Graphic presentation in the form of break-even charts and profit-volume charts are also used to facilitate planning future performance.
8. **Valuable adjunct to other techniques:** Marginal costing is a valuable adjunct to standard costing and budgetary control.

Limitations: The main Limitations of marginal costing are as follows:

1. **Difficult analysis:** Marginal costing assumes that all costs can be analysed into fixed and variable elements. In practice however, it may be difficult to

segregate all costs into fixed and variable components. Certain costs are caused purely by management decisions and cannot be strictly classified as fixed or variable, *e.g.*, ameneties to staff, bonus to workers, etc.

NOTES

2. **Ignores time factor:** By ignoring fixed costs, time factor is also ignored. For instance, marginal cost of two jobs may be identical but if one job takes twice as long to complete as the other, the true cost of the job taking longer time is higher than that of the other. This is not disclosed by marginal costing. Production cannot be achieved without incurring fixed costs but marginal costing creates an illusion that fixed costs have nothing to do with production.
3. **Difficulty in application:** It is difficult to apply marginal costing technique in industries where large stocks of work-in-progress are locked up. Thus in ship building or construction contracts, if fixed overheads are not included in the valuation of work-in-progress, there may be losses each year, while on the completion of contracts, there may be huge profits. Such fluctuations in profits can be avoided if total absorption costing is employed.
4. **Less effective in capital-intensive industries:** In capital-intensive industries, the proportion of fixed costs (like depreciation, maintenance, etc.) is large. The marginal costing technique, which ignores fixed cost, thus proves less effective in such industries. With the increased automation in industries, marginal costing is, therefore, left with a limited scope.
5. **Improper basis of pricing:** Where prices are fixed by competition, marginal costing gives the impression that so long as prices exceed marginal cost, production is profitable. It ignores the danger of too much sales being made at marginal cost or marginal cost plus some contribution as it may result in overall losses. Although in certain circumstances product may be sold at less than total cost, prices in the long run must cover total cost as otherwise profit cannot be earned.

14.5 DIFFERENTIAL COSTING

As you have learnt in the previous unit, differential cost is the difference in cost between one alternative and another. It is obtained by subtracting the cost of one alternative from the cost of the other alternative. For example, when management is considering a change in the level of production, differential cost will be calculated by substracting the cost at lower level of production from that of a higher level.

NOTES

Example:

	Alternative I	*Alternative II*	*Differential cost/revenue*
Output (units)	5,000	7,500	2,500
	₹	₹	₹
Materials	20,000	30,000	10,000
Labour	6,000	9,000	3,000
Variable overheads	4,000	6,000	2,000
Fixed overheads	5,000	6,000	1,000
Total cost	35,000	51,000	**16,000**
Sales	50,000	70,000	**20,000**

Thus, in order to produce additional 2,500 units, additional cost is ₹16,000 (*i.e.*, 51,000 – 35,000). In other words, differential cost for 2,500 units is ₹16,000. It should be noted in this example that if additional output does not involve any additional fixed cost to be incurred, the differential cost will be equal to marginal or variable cost. Thus, when fixed costs remain constant, the differential cost is synonymous with the variable costs of producing the n-units. It is for this reason that differential cost is sometimes referred to as marginal cost.

Sometimes the term *incremental* cost is also interchangeably used with differential cost. The readers should note that incremental cost actually means only an increase in cost from one alternative to another. In the above example, it costs ₹51,000 to produce 7,500 units and ₹35,000 to produce 5,000 units, the incremental (and differential) cost of producing additional 2,500 units is ₹16,000. In the same way, differential cost may be referred to a *decremental cost*, were decrease in output is being considered.

Incremental Revenue: Difference in revenue of two alternatives is termed as incremental revenues. In differential cost analysis, decisions are taken on the basis of comparison of differential cost with incremental (or decremental) revenue. An alternative is considered profitable when incremental revenue is more than differential cost. In the above example, differential cost is ₹16,000 whereas incremental revenue is ₹20,000. This means alternative II produces additional profit of ₹4,000 (*i.e.*, 20,000 – 16,000) and is thus, acceptable.

Differential Cost Analysis *vs* Marginal Costing

Differential cost may be synoymous with marginal cost. In fact, the theory of marginal costing is only a part of the more comprehensive technique of differential costing. These two techniques are similar in some respects but also differ in certain other fields. The points of similarity and difference are summarized below:

Similarities: These techniques have the following similarities:

1. Both the techniques are based on the classification of costs into fixed and variable. When fixed costs do not change, the differential cost and marginal cost are the same.
2. Both differential costing and marginal costing are techniques of cost analysis and presentation.
3. Both the techniques are used by the management in decision making and formulating policies.

Differences: They have the following differences:

1. The technique of marginal costing excludes all fixed costs from its analysis, whereas, differential cost analysis includes identifiable or traceable fixed costs. (Identifiable fixed costs are those which change between alternatives since these are identifiable with specific alternatives).
2. Marginal costs may be incorporated into the formal accounting system while differential costs are worked out separately for reporting to management for making specific decisions.
3. In marginal costing, contribution, P/V ratio, key factors, etc., are the main yardsticks for evaluation of performance and making decisions. In differential cost analysis, on the other hand, comparison is made between differential cost and incremental revenue for decision-making purposes.
4. Differential cost analysis can be made in the case of both absorption costing as well as marginal costing.

Check Your Progress

5. Why is it said that there is realistic valuation of stocks in marginal costing?
6. What is incremental revenue?

14.6 ANSWERS TO CHECK YOUR PROGRESS QUESTIONS

1. In its narrow sense, break-even analysis is concerned with determining break-even point, i.e., that level of production and sales where there is no profit and no loss. At this point total cost is equal to total sales revenue.
2. Angle of incidence is formed by the intersection of sales line and total cost line at the break-even point (*see* Fig. 14.1). This angle shows the rate at which profits are being earned once the break-even point has been reached.
3. A high P/V ratio indicates high profitability.

NOTES

4. Margin of safety may be expressed in absolute money terms or as a percentage of sales.
5. In marginal costing, stocks of work-in-progress and finished goods are valued only at variable costs. Thus no fictitious profits can arise due to fixed cost being absorbed and capitalized in unsold stock. This is because marginal costing prevents the carry forward in stock valuation of some portion of current year's fixed costs. Stock valuation in marginal costing, is, therefore more realistic and uniform.
6. Difference in revenue of two alternatives is termed as incremental revenues.

14.7 SUMMARY

- Cost-volume-profit (CVP) analysis or break-even analysis is a powerful tool of profit planning based on marginal costing approach.
- CVP analysis is 'the study of the effects on future profits of changes in fixed cost, variable cost, sales price, quantity and mix.'
- Break-even point is that level of sales where there is no profit and no loss.
- Break-even analysis can be performed with the help of algebraic formulae or by graphic presentation in break-even charts.
- P/V ratio helps in calculating the break even point and also calculation of sales for achieving desired level of profit, etc.
- The difference between actual sales and break-even sales is margin of safety. A large margin of safety indicates that the business can still make profit when there is a serious fall in its sales.
- The following advantages are claimed for marginal costing over total absorption costing: it helps in managerial decisions, cost control, is a simple technique, there is no under and over-absorption of overheads, aids profit planning and is a valuable adjunct to other techniques.
- The main disadvantages of marginal costing are as follows: difficult analysis, ignores time factor, difficulty in application, is less effective in capital-intensive industries, and is improper basis of pricing.
- Differential cost is the difference in cost between one alternative and another. It is obtained by subtracting the cost of one alternative from the cost of the other alternative.
- Differential costing and marginal costing are similar in some respects but also differ in certain other fields.

14.8 KEY WORDS

- **Profit/volume ratio:** It expresses the relation of contribution to sales.
- **Margin of safety:** It may be defined as the difference between actual sales and sales at break-even point.
- **Differential cost:** It is the difference in cost between one alternative and another.
- **Incremental revenue:** It is the difference in revenue of two alternatives.

NOTES

14.9 SELF ASSESSMENT QUESTIONS AND EXERCISES

Short-Answer Questions

1. List the assumption of break-even analysis.
2. Briefly explain the algebraic computation of break-even point.
3. What are the uses of P/V ratio? How can improvement in P/V ratio be achieved?
4. What is margin of safety? How is it calculated?
5. Compare the similarities and differences between marginal and differential cost analysis.

Long-Answer Questions

1. Describe the construction of break even and profit volume charts.
2. Explain the advantages and limitations of marginal costing.
3. Haryana Tractors Ltd have an installed capacity of 5,000 tractors per annum. They are presently operating at about 35 per cent of installed capacity. For the coming year, they have budgeted as follows:

   Production/sales 4,000 units

Costs:	₹ (crores)
Direct materials	8.00
Direct wages	0.60
Factory expenses	0.80
Administrative expenses	0.20
Selling expenses	0.20
Profit	1.00

NOTES

Factory expenses as well as selling expenses are variable to the extent of 20 per cent. Calculate the break-even capacity utilization percentage.

4. State briefly the effect of the following on break-even point and profit–volume ratio:
   (i) Reduction in variable cost ratio
   (ii) Increase in total fixed cost
   (iii) Increase in price of the product
   (iv) Increase in quantity of sales

14.10 FURTHER READINGS

Sahaf, M. A. 2013. *Management Accounting: Principles and Practice,* 3rd edition. New Delhi: Vikas Publishing House.

Arora, M. N. 2012. *A Textbook of Cost and Management Accounting, 10th edition.* New Delhi: Vikas Publishing House.

Maheshwari, S. N., Suneel K. and Sharad K. 2018. *A Textbook of Accounting for Management,* 4th edition. New Delhi: Vikas Publishing House.